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VARIATIONS IN THE PHAGOCYTIC AND OTHER POWERS OF LEUKOCYTES *

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In the course of the recent study of phagocytosis, inaugurated by the discovery of opsonic substances in the blood and other fluids, it has been observed by various investigators that, contrary to the original belief of Wright and others, the phagocytic power or activity of the leukocytes is subject to considerable variation independently of variations in the opsonic content of the blood. It is the purpose of this article to review briefly the observations touching variations in the phagocytic and allied powers of leukocytes under different conditions, because it seems to me that the results at hand have a direct bearing on the larger problem of the anti-infectious powers of the blood as a whole.

The phagocytic power of leukocytes from a particular source may be compared with that of other leukocytes by finding the amount of phagocytosis performed by each under strictly comparable conditions. For such purpose the phagocytic mixtures, which would be the same in all respects save for the sources of the leukocytes, self-evidently must contain the same number of leukocytes. Hence standardized suspensions of leukocytes, that is, neutrophil leukocytes, the chief bacterial phagocytes, must be prepared. The number of polymorphonuclear cells in the same volume of each leukocytic suspension, made in the usual way, is determined by counting, and then the stronger suspensions are diluted with salt solution so that all acquire the same density. In other respects the procedure is quite the same as that used for determination of the opsonic content of serum. Of course, the samples of blood and of other fluids containing the leukocytes that are to be studied must be collected at the same time, and all the subsequent manipulations must be carried out under the same conditions in all respects.

This in brief is the general plan of the investigations of the subject in hand, made in this institute by Rosenow, Tunnicliff, Boughton and Eggers. In the case of at least some of the investigations made elsewhere, it is not always clear from the reports in the literature that due attention was given to this matter of having an equal number of phagocytes in the mixtures made for the comparison of the phagocytic power of leukocytes from different sources. This criticism probably applies to one of the earliest observations bearing on this question, namely, that by Ledingham and Bulloch[1] to the effect that the leukocytes of the leukocytosis produced in rabbits, by injection of sodium cinnamate, are less active phagocytically for staphylococci than the leukocytes of normal rabbits. It is quite evident—and Fleming[2] has shown it to be the case—that in mixtures containing an unequal number of leukocytes there will be less phagocytosis per phagocyte in the mixture containing the larger number of leukocytes, and vice versa. In other words, an apparent difference in phagocytic power may result from inequality in the number of leukocytes in the mixtures studied. Using numerically standardized leukocytic mixtures, Rosenow,[3] who also was one of the very first to make extensive studies of the question under discussion, obtained results indicating that in pneumonia the leukocytes have a greater inherent phagocytic power than in health, owing, he suggests, to the preponderance in the pneumonic leukocytosis of younger forms. Not only did he find that pneumonic leukocytes would take up more easily phagocytable pneumococci than normal leukocytes under the same conditions, that is, under the influence of the same serum, but also that the pneumonic leukocytes would take up pneumococci that would resist phagocytosis by the leukocytes of normal blood. Rosenow also observed that pneumonic leukocytes are more resistant to heat, and that after having been heated to the thermal death-point and then resuspended in serum, these leukocytes exercise greater attraction for pneumococci than normal leukocytes—a fact that points to a difference from the normal in the chemical or physicochemical constitution of the leukocytes in pneumonia. Rosenow notes, too, that the leukocytes of acute appendicitis and of puerperal infection also appear to be endowed with increased powers of phagocytosis.

Continuing the review of the articles concerning the question in hand in an approximately chronologic order, we find that Potter and Krumwiede's[4] results seem to indicate that during the height of the pneumonic attack the leukocytes are less active with respect to pneumococci than normal leukocytes, but during the crisis, and just afterward, the phagocytic power rises and then returns to normal.

Park and Biggs[5] found that leukocytes from different normal persons may vary in their phagocytic power for staphylococci.

Several studies have been made on the relative phagocytic power of the different kinds of polymorphonuclear leukocytes according to Arneth's classification, but with

* From the Memorial Institute for Infectious Diseases.

1. Ledingham and Bulloch: An Experimental Inquiry Into the Relationship of Leukocytes to the Opsonic Content of the Blood-Serum, Aberdeen Univ. Stud., 1906, No. 21, p. 321.

2. Fleming: Some Observations on the Opsonic Index with Special Reference to the Accuracy of the Method, and to Some of the Sources of Error, Practitioner, London, 1908, lxxx, 607

3. Rosenow: The Rôle of Phagocytosis in the Pneumococcocidal Action of Pneumonic Blood, Jour. Infect. Dis., 1906, iii, 683.

4. Potter and Krumwiede: Some Observations on Opsonins in Pneumonia and in Four Streptococcus Infections, Jour. Infect. Dis., 1907, iv, 601; Further Observations on Opsonins in Normal and Pathologic Serums, THE JOURNAL A. M. A., Nov. 30, 1907, p. 1815.

5. Park and Biggs: The Opsonic Index as a Guide to Regulate the Use of Vaccines in the Treatment of Disease, Jour. Med Research, 1907, xvii, 77.

rather divergent results. Kaplan[6] found that, so far as staphylococci are concerned, the cells with one nucleus are most active phagocytically and those with four, least active. On the other hand, Briscoe[7] and Pottenger[8] conclude that the leukocytes of Arneth's Classes II and III are the most active (staphylococci and tubercle bacilli), while Busse[9] assigns an equal phagocytic value to all classes of neutrophilic leukocytes in health as well as in conditions of inflammatory and postoperative leukocytosis. In so far as these observers used normal blood, it may be assumed that they used mixtures with the same relative number of different leukocytes.

Achard, Raymond and Foix[10] found the eosinophils in normal blood and in the blood of a case of myelogenous leukemia to be without phagocytic activity; the eosinophils in a pleural exudate were phagocytic, however, and in a case of infection with *Filaria loa* Rattan-Launier and Parvu[11] found them markedly active phagocytically.

Ledingham and Bulloch[1] found the polymorphonuclear leukocytes of subnormal activity in native serum in myelogenous leukemia; in chronic lymphatic leukemia, however, the phagocytic power was greater than normal. In a patient with splenomyelogenous leukemia Bushnel[12] found the polymorphonuclear leukocytes less active phagocytically for staphylococci and tubercle bacilli than normal. In myelogenous leukemia Parvu[13] observed that the polymorphonuclear cells were deficient in phagocytic power for typhoid bacilli and staphylococci; the large mononuclears, on the other hand, were active phagocytes. Kentzler[14] also holds that in myelogenous leukemia the neutrophils are below par in phagocytic power. In these cases, however, the question arises whether the actual comparisons made are based on the study of leukocytic suspensions of the same numerical strength. According to Achard, Raymond and Foix,[10] in the leukemias the leukocytes of the normal types have the usual properties but the abnormal cells almost wholly lack phagocytic power.

Shattock and Dudgeon[15] made the following observations: Washed pneumonic leukocytes accomplished more phagocytosis in pneumonic serum than normal leukocytes, while in puerperal streptococcus infection the leukocytes of the puerpera were less active as phagocytes than normal leukocytes in the same serum. As phagocytable objects they used melanin granules from the eye of the horse and colon bacilli. They conclude that the leukocytes from cases of infectious diseases may be more or less active phagocytically than normal leukocytes and recommend for determination of the total phagocytic power of the blood in a given case—hemophagocytic index—a modification of Leishman's technic, but they do not emphasize sufficiently the requirement of working with suspensions holding the same number of leukocytes.

Bayly[16] observed reduction in the phagocytic power of the leukocytes in conditions of fatigue in tuberculosis. Eggers,[17] who tested the activity of the leukocytes in pulmonary tuberculosis with respect to tubercle bacilli, pneumococci, streptococci and staphylococci, failed to find any striking deviations from the normal; in advanced cases the activity seemed somewhat less than in the early cases.

Glynn and Cox[18] made extensive comparative studies of the inherent phagocytic powers, with respect to tubercle bacilli and staphylococci, of the leukocytes of three normal persons, of one case of mild staphylococcus infection and of several miscellaneous cases. Their results show that there may be variations in the phagocytic power on the part of leukocytes from different persons and from the same person at different times. In conditions of health such variation is probably nonspecific. Glynn and Cox use the term "cytophagic index" to indicate the relative phagocytic power of leukocytes from a given source, as compared with that of leukocytes from a different source used as the standard, the two mixtures being made with the same opsonic serum; and the term "opsono-cytophagic index" has been introduced to indicate the relative phagocytic powers of the leukocytes and serum of one individual, as compared with the phagocytic powers of the leukocytes and serum of another individual used as the standard. Naturally this index, called by Shattock and Dudgeon the hemophagocytic and by Nikolsky[19] the opsono-phagocytic index, yields information of larger significance than the opsonic index which tells us only the relative amount of opsonic substances in the blood and is determined by finding the amount of phagocytosis accomplished by normal, or presumptively normal, leukocytes under the influence of the serum in question.

The article by Glynn and Cox gives a mass of interesting and valuable technical details. They recognize fully the necessity of conducting determinations of the cytophagic and opsono-cytophagic indexes with numerically equalized suspensions of leukocytes which they, however, attempted to secure by counts of the red corpuscles in the mixtures of washed blood rather than by the more direct, and surely more accurate, method of counting the leukocytes themselves.

In various infectious diseases Achard and his associates[20] find the phagocytic activity of the leukocytes with respect to yeast-cells below normal in the early part of the attack, rising later to normal or higher in case of recovery, but not otherwise. As the investigators made no effort to equalize the number of leukocytes in the mixtures prepared, it is difficult to form any opinion as to the value of their results.

In a case of cystitis caused by pseudodiphtheria bacillus, Rosenow[21] found that subcutaneous injections of the specific vaccine caused a moderate degree of leukocytosis and a definite and specific increase of the phagocytic power of the leukocytes in the mixtures containing their own, that is, the patients' serum.

6. Kaplan: Diagnostic and Prognostic Value of Enumeration of the Nuclei of the Neutrophilic Leukocytes and Their Relative Phagocytic Power, New York Med. Jour., 1907, lxxxv, 683.
7. Briscoe: Phagocytic Power of Different Forms of Polymorphonuclear Leukocytes and the Origin of Opsonin, Brit. Med. Jour., 1907, ii, 1423.
8. Pottenger: Phagocytosis in Relation to Arneth's Classification of Neutrophils, The Journal A. M. A., June 19, 1909, p. 1980.
9. Busse: Phagozytose und Arneth's Blutbild, München. med. Wchnschr., 1910, lvii, 70.
10. Achard, Raymond and Foix: Compt. rend. Soc. de biol., 1909, lxvi, 56.
11. Rattan-Launier and Parvu: Recherches sur le pouvoir phagocytaise des polynucleaires éosinophiles, Compt. rend. Soc. de biol., 1909, lxvi, 514.
12. Bushnel: Brit. Med. Jour., 1907, ii, 1422.
13. Parvu: Pouvoir phagocytaire des globules blancs et indice opsonique dans la leucémie myélogène, Compt. rend. Soc. de biol., 1908, lxv, 480.
14. Kentzler: Untersuchungen über Phagozytose und Opsonin, Ztschr. f. klin. Med., 1909, lxvii, 131.
15. Shattock and Dudgeon: Observations on Phagocytosis In Carried Out by Means of Melanin to Ascertain More Particularly Whether the Opsonic Index is Identical with the Hemophagocytic Index, Proc. Roy. Soc., B, 1908, lxxx, 165.
16. Bayly: The Cell as a Factor in Phagocytosis, Lancet, London, 1908, i, 1073.
17. Eggers: Unpublished observations.
18. Glynn and Cox: Variations in the Inherent Phagocytic Power of Leukocytes, Jour. Path. and Bacteriol., 1909, xiv, 90.
19. Nikolsky: Zur Frage der Bestimmung des Opsonischen Index, Centralbl. f. Bakteriol., i, Orig., 1910, lili, 544. This author also observed variation in the phagocytic activity of the leukocytes but he did not use suspensions in which he had determined that the number of leukocytes was the same.
20. Loc. cit. p. 66 and p. 1031 et seq.
21. Rosenow: Immunologic Observations on Ulcerative Cystitis Caused by a Pseudodiphtheria Bacillus, Jour. Infect. Dis., 1909, vi, 296.

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In certain cases of recurring and chronic erysipelas, Boughton[22] observed peculiar relations between the serum and the leukocytes. In one case in particular, of relapsing and recurrent erysipelas of long standing, which he studied with special care, the opsonic index for the infecting streptococcus was usually much lower when determined with the patient's leukocytes than when determined with the leukocytes of a normal person. There existed some peculiar relation between the leukocytes and the serum of the blood of the patient which reduced the amount of phagocytosis. This result is shown clearly in the following experiment which, like his other experiments of similar nature, was made with leukocytic suspensions of equal density:

Patient's serum + normal leukocytes = 5.5 streptococci per leukocyte. Normal serum + normal leukocytes = 3.13 streptococci per leukocyte. Opsonic index of patient's serum *1.76*.

Patient's serum + patient's leukocytes = 0.76 streptococci per leukocyte. Normal serum + patient's leukocytes = 3.56 streptococci per leukocyte. Index (opsono-cytophagic) of patient's blood *0.21*.

As the phagocytic power of the patient's leukocytes was subnormal in native serum but at par in normal serum, it is evident that the reason of the low phagocytic action of the patient's blood resided in the patient's serum, even though this serum gave a high opsonic index. From the experiments that Boughton made to analyze the mechanism of action of the patient's serum in this case, one cannot determine whether the depressing effect of the serum on the corresponding leukocytes was caused by the absence of some necessary element or by the presence of some inhibitive substance. Boughton found that the addition of a minute quantity of normal serum to mixtures of the leukocytes and serum of the patient's blood promptly raised the phagocytic activity of the leukocytes to normal. Furthermore, the leukocytes of the patient, on being treated with normal serum and then washed with salt solution, would retain normal phagocytic power in the presence of the patient's serum. Hence it does look as if the normal serum did supply some lacking element, and yet there may have been present in the patient's serum an inhibitory substance or quality which normal leukocytes could overcome, but against which the patient's leukocytes were powerless unless in the presence of normal serum or after being treated therewith. That the restorative effect of normal serum was not due to the thermolabile opsonic element is shown by the fact that this patient's serum after being heated was not reactivated by the addition of a small amount of fresh serum. Here, then, is a striking example of reduction of phagocytic power of the leukocytes by obscure changes of a specific character in the homologous serum. It would be strange if conditions like the one described by Boughton do not have a direct bearing on the continuation and progress of the infection. In this particular case the injections of fresh horse serum seemed to have a detrimental effect. Injections of fresh human serum were not given, and it would seem desirable to study the effect of such injections in similar cases.

Rosenow[23] has made extensive studies of the anti-pneumococcus powers of the blood in several cases of chronic pneumococcus endocarditis. In such cases he finds that there may be considerable variation in the phagocytic power of the leukocytes. At times when there is leukocytosis the phagocytic activity may be greater than normal; more often it is subnormal, especially if the test is carried out with the serum of the same patient as the leukocytes, and occasionally this reduction is limited specifically to the pneumococcal strain causing the infection. In all the experiments bearing on this point as well as on the comparative pneumococcocidal action of the leukocytes, Rosenow used leukocytic suspensions of the same numerical strength, at least as far as the neutrophils are concerned.

Human blood has pneumococcocidal powers. This is easily demonstrable by means of the usual plate method under proper conditions.[24] The pneumococcocidal effect is the result of the conjoint action of the fluid part of the blood and of the leukocytes—by itself either constituent is quite harmless. The first step in this action is opsonification and phagocytosis of the pneumococci; the final step is destruction of the ingested cocci associated with disintegration of the phagocytic leukocytes. Now Rosenow studied particularly the variations in the destructive powers of the leukocytes with respect to pneumococci in cases of chronic pneumococcus endocarditis, and the following in brief are the principal results: While phagocytosis and intraleukocytic destruction of the pneumococci isolated from cases of chronic endocarditis, so to speak, may run hand in hand in mixtures of suspensions of normal leukocytes or of the patient's leukocytes with *normal serum*, this is not always the case in like mixtures with the *patient's serum*. Lowered phagocytic power seems nearly always associated with lowered destructive power, but at times when the phagocytic action of the patient's leukocytes is normal, or greater than normal, there may occur an apparently complete failure of destruction of the pneumococci taken up by the leukocytes in native serum. That is to say, the patient's leukocytes may take up pneumococci readily in native or normal serum, but exercise destructive power only in normal serum. More rarely, this is true of normal leukocytes as well. As illustration I give the results of one experiment:

PATIENT'S LEUKOCYTES

Mixtures	Phagocytosis—figures give average number of pneumococci per leukocyte after 15 min.	Pneumococcocidal action as determined by number colonies on blood agar plates inoculated with equal amounts	
		Immediately	After 24 hours
Normal leukocytes + normal serum.	1.6	30	14
Normal leukocytes + patient's serum.	1.1	35	2500
Patient's leukocytes + normal serum.	1.2	28	15
Patient's leukocytes + patient's serum.	1.4	22	1550

The addition of a small amount of normal serum to the patient's serum restored the phagocytic and destructive powers of the mixtures with this serum; even the mere washing of the leukocytes in normal serum may accomplish this result, showing conclusively that the serum exercises a definite influence on the activities of the leukocytes which is quite independent of its opsonic influence.

22. Boughton: Interaction of Serum, Leukocytes, and Bacteria in Phagocytosis, Jour. Infect. Dis., 1910, vii, 111; Peculiarities of Phagocytosis in Some Cases of Erysipelas, Tr. Chicago Path. Soc., 1910, viii, 24.

23. Rosenow: Immunologic and Experimental Studies on Pneumococcus and Staphylococcus Endocarditis, Jour. Infect. Dis., 1909, vi, 245; Immunologic Studies in Chronic Pneumococcus Endocarditis, Ibid., 1910, vii, 429.

24. Rosenow: Jour. Infect. Dis., 1910, vii, 440.

The failure of intraleukocytic disintegration to take place in the patient's serum seems to be specific for the infecting pneumococcus, at least in some cases. In attempting to analyze this phenomenon, Rosenow made some experiments in which he used endocarditis pneumococci that had been "sensitized," i. e., previously treated with serum at 37 C. for ninety minutes and then washed. In this case normal leukocytes destroyed the pneumococci sensitized in the patient's serum just as well as those sensitized in normal serum, hence their occasional lack of destructive action in the full presence of the patient's serum must be due to the effect of that serum on the leukocytes. With respect to the patient's leukocytes, it was found that at times they failed to destroy cocci whether sensitized in normal serum or in the patient's serum—hence were lacking in some quality possessed by normal leukocytes—whereas at other times they would destroy only those pneumococci that had been treated with normal serum. These facts point to the existence in normal serum of a substance or quality which promotes the intraleukocytic disintegration of pneumococci. In cases of chronic pneumococcus endocarditis, lowering of the destructive power of leukocytes may be due to a deficiency of this substance or to the presence of a neutralizing substance. In Rosenow's cases, the occurrence of joint involvement and other complications was preceded by a fall in the phagocytic and destructive powers of the blood toward endocarditis pneumococci and succeeded by a rise. These observations also help us to understand that specific inoculations, even though they may increase temporarily the amount of opsonin in the blood, nevertheless may be without any good effect in cases in which leukocytes have lost the power to destroy pneumococci. In such cases, injections of fresh homologous serum would seem indicated.

In a study of the anti-infectious power of infants' blood, Tunnicliff[25] finds that at birth the phagocytic activity of the leukocytes is a little below that of the leukocytes of normal adults so far as streptococci, pneumococci and staphylococci are concerned. During the first months of life the activity falls, but soon a rise begins and the adult standard seems to be reached at about the third year. The opsonic power of the serum describes a similar curve. The low phagocytic power of the leukocytes in infancy as compared with later years would seem to be inherent in the leukocytes because it is demonstrable in phagocytic mixtures prepared with the serum of adults as well as with the serum of infants. Tunnicliff's work indicates, then, that during the first and second years of life the anti-infectious powers of the blood for the bacteria mentioned as measured by the opsonic power of the serum and the phagocytic power of the leukocytes is far below that of adult blood.

Tunnicliff[26] has determined also that the leukocytes in exudates, induced by injections of aleuronat (gluten-casein) suspension in guinea-pigs and dogs, are more active phagocytically than the leukocytes in the blood of the identical animals. To be more specific, in comparable mixtures, using suspensions holding the same number of carefully washed polymorphonuclear leukocytes, the leukocytes of the exudate not only take up a larger number of bacteria (pneumococci, streptococci, tubercle bacilli), but a larger number of leukocytes engage in phagocytosis than in the case of the leukocytes obtained from the blood. Tunnicliff[27] furthermore has shown that, as a rule, there is an increase in the phagocytic power of the leukocytes (cytophagic index) in favorable cases of pneumonia, both before and after crisis. In severe cases the phagocytic power usually is diminished, but rises above normal as improvement sets in. This variation in the phagocytic power of the leukocytes is not specific for pneumococci but is demonstrable also with streptococci and staphylococci. And pneumococcocidal experiments by means of the plate method showed the variation in the phagocytic power to be associated with corresponding and parallel variation in the destructive power. Similar non-specific variations with respect to the leukocytes were observed in severe cases of scarlet fever. In a patient with chronic articular rheumatism there resulted an increase not only in specific opsonin but also in the phagocytic power of the leukocytes after injections of killed streptococci, obtained originally from the patient's tonsil, and this increase in the total phagocytic power of the blood was associated with an increase in the streptococcocidal power of the blood, using normal blood as the standard.

SUMMARY

In determination of the comparative phagocytic power of leukocytes, suspensions prepared under like conditions and holding the same number of leukocytes must be used. Results obtained without these conditions being satisfied are of doubtful value.

It seems that the inherent phagocytic power of the leukocytes of the blood may be subject to some variation, with respect to certain bacteria at least, even in persons in apparently perfect health. Further study on a more extended scale is needed. In the meantime, the idea that the source of the leukocytes for estimation of the opsonic index is wholly immaterial cannot be sustained.

At birth, the leukocytes are somewhat less active phagocytically than in the adult; they grow less and less active during first months of life and then more active, the adult standard for streptococci, pneumococci and staphylococci being reached about the third year (Tunnicliff). On this account, as well as for other reasons, the opsonic index in infants should be determined with leukocytes and serum of infants of the same age as the standard.

There is no conclusive evidence that the different kinds of neutrophils (according to Arneth's classification) differ in phagocytic activity.

There are indications that in myelogenous leukemia the neutrophil leukocytes are below normal in phagocytic power, but further comprehensive studies are necessary in order to obtain conclusive results.

The phagocytic power of leukocytes has been found to be greater than normal, with respect to pneumococci, streptococci and staphylococci, in pneumonia, scarlet fever and other conditions in which there is acute leukocytosis and the outlook is favorable. In pneumonia the leukocytes may be more resistant to heat than normally, they may have greater attraction for pneumococci, and they may take up pneumococci too virulent to be taken up by normal leukocytes (Rosenow).

In pneumonia and in scarlet fever, the destructive powers of the leukocytes for pneumococci and streptococci run parallel with the phagocytic power. In severe cases of pneumonia and scarlet fever, the phagocytic

25. Tunnicliff: Observations on the Anti-infectious Power of the Blood of Infants, Jour. Infect. Dis., 1910, vii, 698.
26. Tunnicliff: Observations on the Phagocytic Activity of the Leukocytes in Exudates, Tr. Chicago Path. Soc., 1911, viii, 208.
27. Tunnicliff: On Variations in the Phagocytic and Coccidal Power of the Blood in Pneumonia and Scarlet Fever, Jour. Infect. Dis., 1911, viii, 302.

and destructive powers of the leukocytes may be lower than normal.

In recent exudates the leukocytes are more active as phagocytes for streptococci, pneumococci, and tubercle bacilli than the leukocytes of the corresponding blood.

The exact causes of the increase in the activity of the leukocytes are not known; it has been suggested that in pneumonia and other acute diseases, in which there is leukocytosis, the increase in activity is owing to the predominance of young leukocytes.

In certain chronic infections, notably chronic pneumococcus endocarditis and chronic erysipelas, the phagocytic activity of the leukocytes may be either above or below normal; at times there may occur a distinct fall in their phagocytic power, which may be specifically limited to the infecting microorganism or observable only in the native serum or both. While the reasons for this fall are yet obscure, it appears to be related closely to changes in the fluid part of the blood because small quantities of normal serum may correct the condition, and so may the mere soaking of the leukocytes in normal serum. What is said of the phagocytic activity appears to apply fully to the processes that lead to intraleukocytic disintegration of the pneumococci in chronic pneumococcus endocarditis. Hence it may be concluded that the fluid of the blood, independently of its opsonic function, directly influences the phagocytosis and intraleukocytic destruction of certain bacteria.

We may say, then, that in acute as well as some chronic infections with pneumococci and streptococci, and possibly also with other bacteria, a real grasp of the specific anti-infectious powers of the blood of the patient is obtainable only by the determination of the combined phagocytic powers of the leukocytes and serum of that blood and of their combined destructive action. In chronic infections, this determination should be made with reference to the infecting strain. Here, especially, the opsonic index alone may be misleading as it may be normal or above normal, and yet the leukocytes of the patient may have less phagocytic power, and, associated therewith or independently thereof, less destructive power than normally.

So far, specific variation in the leukocytic activities with respect to the infecting strain have been observed in infections of long standing only. Such seemingly very special adaptations naturally require time for their development. Further studies along these lines are indicated because the results may lead to a still better understanding of such infections and their treatment.

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ADIPOSITY OF THE MAMMARY GLANDS*

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There are no more interesting and few more mysterious questions in the field of physiologic research than those concerned with the problem of fat metabolism. As a pathologic process, an abnormal fatty condition has been discovered in various organs; one of us (Guthrie) reported a case of necrosis (with fatty change) of the kidney, in the Section on Surgery of this Association at its New Orleans meeting. Reported cases of abnormal adipose conditions of the mammary glands are rare.

Cases of unusual non-neoplastic enlargement of the mammary glands have been reported from time to time as examples of diffuse idiopathic hypertrophy of these structures. One of us (Albert[1]), in reporting a case of this kind a year ago, also reviewed the descriptions of the sixty-nine other cases which had been previously reported. Clinically, cases of idiopathic hypertrophy may be divided into (1), those associated with gestation and (2), those not associated with gestation, most of which are closely related to puberty. Pathologically, the hypertrophied glands are found to consist essentially of a hyperplasia of both the glandular and connective tissue-elements—the hyperplasia of the former predominating in idiopathic gestation hypertrophy, whereas the enlargement of the idiopathic puberty hypertrophy consists principally of fibrous connective tissue.

In the description of the sixty-nine cases referred to,[1] mention is made in only three of the presence of an excess of adipose tissue. Robert and Ammesat,[2] in describing a case of enormous hypertrophy of the mammary glands, stated that microscopic examination indicated an increase especially of adipose tissue.

J. C. Warren,[3] in referring to a case of idiopathic puberty hypertrophy, states that "microscopic examination showed the presence of fat, loose fibrous tissue and atrophied gland-structures."

Beatson,[4] under the title "Hypertrophy of the Female Mamma," refers to the pathology as follows:

> After removal both mammæ presented on section much the same appearance. They were seen to be largely composed of fatty tissue, as if the cause of their excessive size was due to an abnormal growth of fat (lipomatosis). Microscopic examination, however, of the breast-tissue did not support this view. Sections of it showed the glandular elements of a normal breast in a resting condition, but the number of acini seemed to be fewer than normal, while the intra-acinous fibrous tissue was in excess and very dense in character, though scattered through it were spaces filled with a considerable amount of fat. From the appearances observed, it seems very probable that the fat and fibrous tissue went to make up a large part of these hypertrophied mammæ.

The photomicrographic reproduction which accompanied the article suggests that it consists principally of fat.

The case which we are reporting is one in which the enlargement of the mammary glands is due almost entirely to adipose tissue.

REPORT OF CASE

History (Taken May 17, 1910).—The patient, a woman, aged 24, was born in Iowa of German parentage. She is 5 feet 2 inches tall and weighs 164 pounds; is rather stoutly built and fleshy, but not fat. Father's age is 49 and mother's age 45; both are living and well. She has five brothers and four sisters, all living and well. In none of the other members of the family has there ever been any undue enlargement of the mammary glands. In fact, all the sisters, one of whom is more fleshy than the patient, have very small "flat" breasts. Patient began to menstruate at the age of 11. At this time occurred the usual slight enlargement of the breasts. The menstrual periods have always been more or less irregular, being often absent for a period of three or four months.

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

1. Albert, Henry: Diffuse Idiopathic Hypertrophy of the Mammary Glands of the Female, THE JOURNAL A. M. A., Oct. 15, 1910, p. 1339.
2. Robert and Ammesat: L'Union méd., 1851, p. 219.
3. Warren, J. C.: The Surgeon and the Pathologist. A Plea for Reciprocity as Illustrated by the Consideration of the Classification of the Treatment of Benign Tumors of the Breast, THE JOURNAL A. M. A., July 15, 1905, p. 149.
4. Hypertrophy of the Female Mammæ, Edinburgh Med. Jour., 1908, New Series, p. 525.

Present Illness.—When patient was 16 years of age she was sick for three weeks with a severe attack of mumps and what was diagnosed as malaria. Near the beginning of this period of illness she suddenly developed, one night, a severe dull aching pain in both breasts, accompanied by some swelling but no redness. Local applications and bandages were applied, but had no effect on the process. During the following six years the glands gradually grew in size until, at the age of 22, they were about the size of a cocoanut and only slightly painful. At that age she was married (March 21, 1908). From the time of marriage to the time of beginning of pregnancy (about five months) the breasts continued to remain about the same as they had been for some time previous to marriage. After the beginning of pregnancy, the mammæ began to enlarge rapidly, but were for some time no more painful than usual. At the end of the fourth month of pregnancy, they became very painful and remained so during the pregnant state. During the sixth month patient had severe edema of the feet and eyelids and was confined to her bed for several weeks. During this time there was an occasional slight hemorrhage from the uterus. At the end of the seventh month of gestation, the physician found it necessary to produce an abortion to save the life of the patient. The child which was delivered is now

Fig. 1.—Patient with adiposity of mammary glands. From a photograph.

14 months old, weight 22 pounds and appears perfectly well. A small amount of milk appeared from the nipples during the first two days after the delivery of the child. The child could not be suckled, however, because of a flattening out of the nipples due to the excessive growth of the glands. Patient made a good recovery from the illness which produced the edema of the feet and eyelids. After the termination of pregnancy the glands became more soft and the pain less intense, although they remained of about the same size as they were during the last few months of gestation, which is practically the same as they are at the present time. During the past three months the breasts have become especially painful, the pain being most severe in the outer, upper quadrant of the glands. The last and only pregnancy was terminated about fourteen months ago. Since that time the menses have appeared quite regularly. Patient was admitted to the University Hospital May 16, 1910. (Hospital No. 9839.)

Physical Examination of Breasts.—Both glands were rather uniformly enlarged, more or less spherical in shape and hung down so that the most dependent portion of each was on a level with the umbilicus. The right gland (gland-substance) measured 7½ inches from base to nipple; the left, one-half inch less. On the other hand, the left exceeded the right in circumference (greatest), that of the former being 18 inches and of the latter 17½ inches. The nipples appeared as very slight elevations (about one-twelfth inch) on the lower and anterior surface of the glands. The areolæ, which were each about 2¾ inches in diameter, were well pigmented and quite sharply outlined. The skin covering the glands was smooth and quite uniformly stretched over the underlying tissue. The breasts were rather soft in consistency. The presence of quite firm nodules suggested the presence of localized areas of glandular tissue embedded in a mass of adipose tissue. The upper, outer quadrant of the right gland was of a more uniformly firm consistency than any other portion. On account of the severe and continually increasing pain experienced by the patient during the preceding three months, it was decided to amputate the breasts, which was accordingly done by one of us (Guthrie), May 17, 1910.

Operation.—The patient was prepared in the usual manner and a complete amputation of both breasts performed. The glands appeared, from ocular examination, to consist entirely of fat, and hence the pectoral muscles were left undisturbed. The wound was closed with silkworm sutures and a gauze drain placed in the lower angle of each wound.

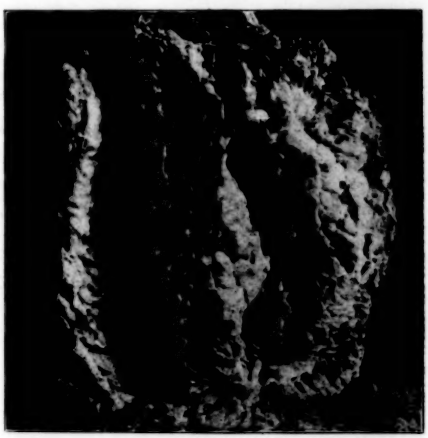

Fig. 2.—Base of left gland, incised, showing lobules of adipose tissue, between which are thin strands of connective tissue.

Postoperative History.—The patient followed a normal course for three days when there developed a mild temperature, the result of a slight infection of the right wound with a rather profuse purulent discharge. The wound was opened, drainage continued a few days, and a reasonably rapid convalescence followed. The patient had no distinct chill at any time.. The discharge was like that frequently seen in very fat abdominal walls with mild infections. Otherwise she made an uneventful recovery and left the University Hospital June 24, 1910. On Feb. 7, 1911, she wrote that she was perfectly well; that she had gained 30 pounds since leaving the hospital, her weight at that time being 150 pounds, and that she could then perform the work of caring for her home. On April 20, 1911, she reported that her weight had increased to 160 pounds, i. e., within 4 pounds of her weight prior to the operation. Monthly periods were regular and free from pain. Her recovery from pain and the incapacitating weight of the gland was complete and she is able to resume entirely her usual work.

Gross Pathology.—The amputated glands together weighed 10¼ pounds, the right 5½ pounds and the left 4¾ pounds. The shape, dimensions and surface contour of the glands changed considerably after they were removed from the body.

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The substance of the glands was found to consist of adipose tissue, with the exception of a few strands of connective tissue running here and there between lobule-like areas of the fatty structure.

Pathologic Histology.—A section cut from almost any part of the gland presented the microscopic appearance of ordinary adipose tissue. This was continuous with what appeared to be the subcutaneous fat. The connective tissue was of the normal, fully developed fibrous type. The larger strands of connective tissue were found to contain a few small gland acini lined by a single layer of cuboidal epithelial cells and representing, apparently, the gland elements in a resting stage.

DIFFERENTIAL DIAGNOSIS

The condition which we have described and which we have chosen to designate as "adiposity of the mammary glands," needs to be differentiated from the following processes:

1. An excessive size of the mammary glands as a part of *general obesity.* In such conditions, the breasts, although containing a large amount of fat, still have their real glandular portion quite well circumscribed and relatively free from fat. In the case which we describe, there was no portion which, to the naked eye, contained any evidence of glandular elements. Furthermore, the patient in question, although rather fleshy, had apparently but little more subcutaneous adipose tissue than the average person. Then, too, her glands increased in size and tenderness at a time when there was no increase in her general body weight.

2. *Idiopathic hypertrophy,* consisting of a hyperplasia of the connective tissue or the glandular elements. Before the glands were amputated, we believed that we were dealing with a case of this kind. We do not believe that it is possible to differentiate between the two conditions until an incision into the gland and a recognition of its structure is made.

3. *Diffuse lipoma.* A tumor, although often quite diffuse, is more or less circumscribed, tending to push the real glandular structure to one side. In our case there was no suggestion of circumscription and the gland acini were quite uniformly distributed—embedded in the slight amount of connective tissue throughout the gland.

PROGNOSIS

In each of the three cases already cited from the literature of idiopathic hypertrophy of the mammary glands, which we regard as probably cases of adiposity, the glands were amputated and amputation was followed by recovery, as in our case. We have therefore no data as to the prognosis in case amputation is not made.

CONCLUSIONS

1. The condition which we have described, representing an unusual enlargement of the mammary glands and consisting almost entirely of adipose tissue, we have chosen to designate by the term "adiposity of the mammary glands."

2. Of the seventy cases of diffuse idiopathic hypertrophy of the mammæ of which we have found a record in the literature, in one mention is made of the fact that the enlargement was due principally to adipose tissue; in two others attention was called to the large amount of adipose tissue present. We believe that the one, certainly, and the other two, probably, were cases of adiposity of the breasts.

3. We believe that it is advisable to make more general use of the term "macromastia" to denote enlargement of the breasts due to any cause, and to differentiate between the terms "hypertrophy" and "adiposity," according to whether the enlargement is due to glandular (and possibly also connective) tissue on the one hand, or adipose tissue on the other.

Fig. 3.—Left gland showing lobules of adipose tissue beyond the edges of the skin which has been contracted and wrinkled by the formaldehyd preserving fluid.

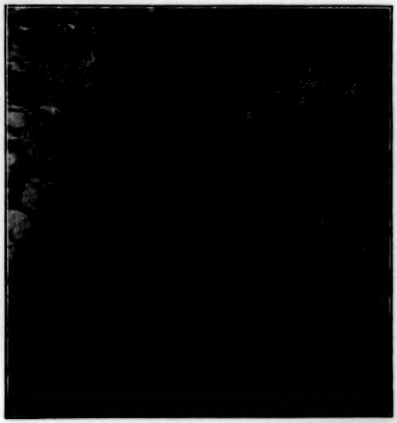

Fig. 4.—Section from piece of left gland showing adipose tissue adjacent to one of the larger strands of connective tissue, in which were found a number of gland acini presenting practically the normal size, shape, structure and arrangement. The mamma consisted almost entirely of adipose tissue of normal appearance.

Municipal Health.—No community is so poor that it can afford to permit typhoid for the lack of a filter, or inefficient children for the lack of good schools, or criminals for the lack of playgrounds, or wayward girls for the lack of protection, or exploited childhood for the lack of a factory inspector, or industrial accidents for lack of a compensation law or an insurance system.—Devine in "Misery and Its Causes."

THE TREATMENT OF CERTAIN OBSTRUCTIVE BENDS OF THE INTESTINES DUE TO ABNORMAL MESENTERIC ATTACHMENTS AND INADEQUATE PARIETAL SUPPORT *

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There are four important portions of the intestinal tract that suffer notable distortion and lead to pathologic results due to an anomalous condition of the mesenteric attachments and inadequate support of the abdominal parietes, viz., the duodenum, the terminal portion of the ileum, the appendix vermiformis and the sigmoid.

The distortion usually occurs as a result of the two principal causes named, but may occur in a less aggravated form with only one of the two causes acting. In a recent paper I dwelt on these causes as they especially affected the terminal portion of the ileum, and the facts given there as an explanation of the distortion occurring at that portion of the intestinal tract apply in principle to the other regions enumerated. In this paper I wish to note briefly a line of postoperative treatment which I consider rational and which has been successfully pursued in a number of the terminal ileum variety of distortions commonly known as the "Lane kink" (Fig. 1).

Fig. 1.—A kink with adhesions. Not a marked type. Picture borrowed from C. H. Mayo.

The Lane kink is a term applied to a pathologic bend of the terminal six inches of the ileum. It is manifested by an acute angle of that portion of the bowel complicated by a thickening of its mesentery and the adhesion of the two arms of the angle together, to surrounding intestinal coils, and to its own mesentery in which it is frequently rolled, the whole condition eventuating in more or less intestinal stasis.

I have concluded that the kinking of the ileum within 4 inches of its cecum attachment instead of elsewhere is due to the fact that the ileum at its termination in the large bowel possesses an extremely short mesentery, viz., from 1 to 2 inches. Given this comparatively fixed portion of the compressible tube, there are two factors which lead to its distortion, (a) a too movable or displaced large bowel, and (b) an abnormal disposition of the remaining portion of the small bowel or other viscera.

Adhesions occur from (1) extension of infection from infected appendix in both male and female, and the uterine appendages in the female; (2) from friction of the opposed serous membranes from violent mechanical action resulting from the factors causing the distortion; (3) rarely from direct migration of bacteria through the violated tissues of the intestines.

The different conditions I have observed accompanying pathologic kinks of the last 6 inches of the ileum are as follows:

A. Extreme prolapse of cecum and ascending colon.

B. Extreme prolapse of the stomach with transverse colon prolapsed beneath the stomach, the small intestines filling the pelvis and lower abdomen underneath the stomach and colon, resulting in a definite right angle kink of the ileum near its attachment to the cecum.

C. A condition in which both cecum and small intestines are prolapsed, and in which a tendency to general visceral prolapse is present, resulting in a variety of kinks in the last 6 inches of the ileum, owing to pull on its short mesentery, the shape and direction of the bend depending on the particular influence exerted on it by the abnormal position of the viscera surrounding it.

D. The kinks or bends are in my opinion due, therefore, to a decided displaceability, not only of the cecum, but of all the viscera surrounding the last three inches of the ileum, traumatizing it by undue pulling on its distal end in the case of the cecum, on its proximal end in the case of the balance of the ileum, or by pressing on it and its attached mesentery, and grinding their opposing surfaces together in case of marked displacement of the superimposed viscera, such as the right kidney, the liver or stomach.

Fig. 2.—Same as Figure 1, with kink obliterated. (From C. H. Mayo.)

The causes leading to a tendency to general visceral ptosis, which is such a strong factor in the production of this obstructive bend, are naturally two in number, viz., congenital and acquired.

The congenital defects are found (a) in the failure of early blending of the peritoneal layer with the parietes which results in the normal individual with an adequate fixation of the stomach, the liver, the spleen, the pancreas, the duodenum, the ascending and descending colon; (b) in a failure of normal development of the muscular parietes of the abdomen and the strong supporting fascia which aid in retaining the viscera at their normal levels in the perpendicular human being.

The acquired defects are brought about by acute or chronic diseases which leave the individual without normal abdominal muscle support, and diseases which deprive the individual of normal fat deposits in the parietes and about the viscera in the abdominal zone.

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

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As the same treatment applies, with a few obvious variations, to the pathologic bends in the other portions of the intestinal tract after operative correction, and to the general management of abdominal prolapse, I shall describe the treatment as I have carried it out in the management of the Lane kink. I shall not enter into a detailed discussion of the methods of treating this condition, as described and carried out by Mr. Lane, more than to say that I can hardly conceive of a case in which short-circuiting with the lower bowel or the more radical operation of removing the colon, as advocated and carried out by him, can offer a more certain cure (and certainly it is attended with greater risk) than can be obtained by the less radical procedure that I am to describe (Fig. 2).

Very often in the past, the kink at the terminal end of the ileum was discovered in the course of an appendectomy or other exploratory abdominal operation. Finally, the significance of an intestine nearly obstructed by an acute bend and maintained so by strong peritoneal adhesions was forced on the attention of one more thoughtful than the rest, and he was fortunately unconventional enough to say to us that we had been overlooking something. Now, we not only find this important pathologic condition in a large number of cases, but we have learned to realize that it accounts for uncured appendicitis and some of us have demonstrated it by reoperating on our patients.

Fig. 3.—A typical Lane kink drawn from one of author's cases.

In the beginning we were satisfied (as we knew nothing else to do) to incise the adhesions, straighten out the bowel, tuck a mass of omentum in the uncovered space, close the abdomen, and as soon as the same condition reoccurred which caused the difficulty, viz., the patient assuming an upright position and pursuing his daily labors, the pathologic kink returned with all its symptoms. The method I have pursued is as follows:

Laparotomy through a right rectus incision. Treatment of any concurrent diseased condition after careful exploration of the abdomen. Separate, especially, the adhesions about the sigmoid and straighten out any acute bends of the intestines, as it is the acute bend in a disadvantageous position made permanent by adhesions which gives rise to symptoms; bring up the head of the cecum with the terminal portion of the ileum. If it is covered with an adventitious membrane (the Jackson veil, Fig. 5, B), as it frequently is, this should be torn through and the underlying structures freed from it. The ileum should then be made taut to reveal the maintaining adhesions and these adhesions carefully divided with a knife, or when particularly frail, with sponge dissection. This releases the intestine and it will unroll (as it is frequently twisted) and straighten out. The patient should be in Trendelenburg position during the operation. After the bend is freed, the cecum and the attached ileum are replaced in their normal positions. These new positions will frequently be much higher than the position in which they were found. The omentum is then spread over the parts treated and the abdomen closed.

Before the last procedure, in severe cases, the radical treatment that has been carried out by Mr. Lane and his followers has been to short-circuit a portion of the ileum above the seat of the obstruction to some portion of the lower bowel, and in extreme cases remove the colon. This procedure has been carried out on the theory that the kink will reoccur at the same portion of the ileum as before, and that the colon has been rendered worse than functionless by the same inherent vicious condition in the dynamics of the abdomen that has produced the kink.

As previously stated, I believe that these pathologic kinks occur as a result of the fact that the portion of

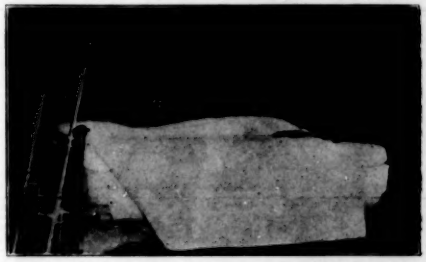

Fig. 4.—Mechanism for supporting the bed in Trendelenburg position. Author's case.

the intestine with short mesenteries, the seat of the bend, has been unduly pulled on by the intestinal tube immediately proximal and distal to it, because of abnormal looseness of attachment of these portions to the parietes or the grinding and pressure of overriding, superimposed, prolapsed viscera, and to lack of abdominal support. Therefore, I believe that the rational procedure necessary to prevent a recurrence of the bend is to support the proximal and distal portion of the intestine adjacent to the corrected kink by peritoneal fixation if practicable and by reinforcing, temporarily at least, the abdominal wall by supports; and then by a course of gymnastics, postural treatment and forced feeding, correct permanently the mechanical defects.

For some time I have endeavored to execute systematically the following procedure: (a) replacement of the adjacent pulling viscera, aided by the Trendelenburg position; (b) the application of a snugly fitting adhesive-plaster abdominal support over a reinforcement, immediately above the pubis, of a combination pad; (c) the transference of the patient from the operating-table to a bed with a 15-degree Trendelenburg inclination (Fig. 4); (d) a careful regulation of the food-supply as convalescence will allow until forced feeding is estab-

lished; (e) with convalescence from operation, a careful application of a permanent abdominal support or corset to be worn during the day, always applied with patient in steep Trendelenburg; (f) systematic gymnastics of the abdominal wall for fifteen minutes twice a day, night and morning, with patient in Trendelenburg position without the abdominal support; (g) systematic regulation of the diet after convalescence, with the object of increasing flesh and depositing in all portions of the individual a padding of normal fat.

In the operation, careful observance should be made to ascertain, when a prolapsed cecum is one of the etiologic factors of the bend, if the prolapse is due to a lack of normal blending of the ascending colon with the posterior parietes. If the blending has failed to occur, the defect may be remedied by attaching the outer border of the ascending colon to the peritoneum of the parietes, thus imitating Nature's way of obliterating the mesentery in embryo. F. Gregory Connell[1] utilizes a portion of the Jackson membrane (this membrane frequently being present where the ascending colon has failed to attach) as a means of suspending the head of the large bowel, by including a twisted portion of the

Fig. 5.—(A) Types of Lane kink, from Lane's article. (B) A kink of the terminal ileum covered with a Jackson membrane (one of Connell's cases). (C) Method of utilizing the Jackson membrane in fixing the cecum at its normal level. (Same case from F. Gregory Connell.)

upper end of the membrane which has been detached, in the muscles of the abdominal wall in closing the parietal wound (Fig. 5, B and C).

In a large percentage of the cases in which peritoneal blendings have failed to develop, however, there is such a universal visceral prolapse that it is futile to attempt to cure them by any form of "pexies," and I therefore carefully replace the organs, the force of gravity in the Trendelenburg position aiding, and depend on the week in bed with the lowered head and closely fitting bandage to retain the viscera at their normal level until convalescence begins.

Then comes the "tug of war" in the management of these cases. The perpendicular position of the patient with the resumption of routine duties will immediately, without the most strenuous efforts to counteract the effect, precipitate a relapse of the condition of kink with its attending disasters of local distress, stasis, toxemia and obscure anemias, by bringing into play the very factors that caused the difficulty originally.

The patient is fitted with a stout linen bandage constructed in such a manner that it definitely and adequately supports and uplifts the contents of the lower abdomen. These supports can be made after some general pattern (Figs. 6 and 7A), but each one must be carefully fitted by an expert bandage-maker and the surgeon must know that they accomplish the work for which they are intended. The support must be constructed, too, in such permanent shape that its reliability can be depended on. This bandage in women can be replaced later by a properly constructed corset (Fig. 7B).

With this abdominal bandage, the patient may be allowed to assume the perpendicular position and to walk.

Each night before retiring, the patient assumes a position on a Trendelenburg table, improvised or otherwise, with a 15° to 20° inclination and the bandage is removed for the night. After its removal the abdominal muscles should be exercised for fifteen minutes. In a sanitarium or hospital (Fig. 8), this can be superintended by an attendant. At home it can be done by a member of the family. In some cases, if the patient is sufficiently impressed with the necessity for thoroughness, he or she can be trusted to carry out the treatment. The object to be accomplished is the voluntary exercise of the muscles by contracting them against an applied resistance. This resistance can be applied by the hands of the masseur, the patient's own hands or some mechanical apparatus, such as a vibrator or a large wooden ball which can be moved about over the abdomen by the patient. Each portion of the abdomen should be systematically covered and all the muscles made to contract

Fig. 6.—Types of bandages employed suitable to both men and women.

against the applied resistance. An inexpensive home treatment is the tossing or elevating of the ball by successively contracting different portions of the lower abdomen as the ball is moved from place to place.

The patient then retires after the fifteen-minute exercise of the abdominal muscles combined with the postural treatment. On rising in the morning, before the bath, the same posture is assumed and the exercise repeated. Then after the bath, with the patient still in Trendelenburg position, the abdominal support is applied for the day.

Systematic feeding with the object in view of increasing the flesh, especially the normal deposit of fat of the patient, should be our principal aim in the treatment of these individuals. As a rule this is not a difficult matter after the partial obstruction of the intestines has been removed by the liberation of bands of adhesions and kinks of the intestine which have given rise to the intestinal stasis. Very often a normal, well-selected diet of nourishing food will be readily assimilated and this can be supplemented by cream and, if the bowels are still inclined to require some additional stimulation, a liberal allowance of pure California olive oil may be added, if it is not objectionable to the taste of the individual, the oil aiding in the increase of fat accumulation and its excess acting as a laxative.

If the patient, with the exercise that should be indulged in, is unable to digest a normal liberal diet at

1. Surg., Gynec. and Obst., November, 1911.

the beginning, a careful regulation of predigested foods should be made or the administration of smaller quantities of undigested staple foods at more frequent intervals. I can conceive how it might occasionally be necessary to pursue the careful diet-regulation of the Weir Mitchell method of forced feeding, although in the class of cases under consideration I have not found it necessary. My patients have voluntarily sought a liberal normal diet, and their digestions have been equal to the new demands on the digestive organs.

The result of this systematic treatment I have outlined, it seems to me, must be obvious. The liberation of the acute kinks of the small intestine and the separation of adhesive bands and adhesion of surfaces of intestine to each other and to their mesenteries, as well as other soft parts, makes patulous hitherto obstructed or partially obstructed intestines (Fig. 9).

Replacing these restored viscera to their normal positions, together with all other displaced viscera which may have influenced their distortion, by means of a

Fig. 7, A.—A type of bandage employed immediately after patient leaves her bed. Worn while patient is in upright position.
Fig. 7, B.—The type of corset that may be used as a substitute for bandage as the patients are convalescing. Author's case.

laparotomy and then placing the patient while convalescing on an inclined plane in bed, in order to utilize gravity to maintain the corrected viscera at a normal level while healing, prevents immediate relapses, and normal healing temporarily prevents relapse.

The application of an adequate day-time bandage as soon as the patient leaves the bed and is prepared to assume the perpendicular, the systematic exercise of the abdominal muscles night and morning while the patient is in steep Trendelenburg, not only restrains a pulling of the otherwise loose viscera on the terminal ileum, but affords an opportunity of restoring tone to the lax and inadequate abdominal muscles and fascia.

While the forced feeding places a zone of fat beneath the parietal peritoneum, a substantial layer of fat between the two leaves of all mesenteries restores the fat in the kidney spaces, reinforces the omentum and thereby stiffens and shortens the peritoneal supports everywhere, pads the loose spaces of the abdomen and actually assists in rendering taut and supportive the whole abdominal content.

This treatment offers substantial relief in all cases under consideration, actually cures the acquired variety and offers the only rational treatment, if conscientiously pursued, that will make permanently comfortable the congenital variety.

SHORT ABSTRACT OF TWELVE CASES

I realize that claims of conclusive importance cannot be deducted from twelve cases with so little time elapsing since operation. The results have been so prompt in all cases, however, that they seem well worth recording.

CASE 1.—Mrs. K., St. Luke's Hospital, Aug. 23, 1910. Appendix removed seven years previously. General visceral ptosis; appendix region free; cecum prolapsed. Taut pull in terminal ileum; apex of kink rolled on itself and lumen obstructed. Terminal arm adherent to cecum and to the descending arm of its proximal portion (Fig. 10, A). Not treated by present line of treatment. Partially relapsed and then placed on postural, support and feeding treatment. Gradually improving but may require another operation to overcome relapsed kink.

CASE 2.—Mrs. S., St. Luke's Hospital, Aug. 13, 1910. Chronic appendicitis accompanied by stomach crises with vomiting; extremely anemic. Rest in horizontal position gave

Fig. 8.—Illustrates massage of abdominal muscles with patient in Trendelenburg position. Hospital treatment.

relief. Operation showed appendix adherent beneath prolapsed cecum, a distinct pull on terminal ileum with contracted bowel, and distinct kink at mesenteric pull. Terminal portion adherent to cecum and proximal arm prolapsed in pelvis and adherent to broad ligament (Fig. 10 B). After operation, patient was systematically treated by postural, support and feeding treatment. Gained 15 pounds of flesh and her symptoms have disappeared.

CASE 3.—Mrs. M., St. Luke's Hospital, Sept. 16, 1910. General loss of flesh, following childbirth, with laceration of perineum and uterine prolapse. Pain in right side; occasional attacks of vomiting with extreme prostration. Laparotomy showed cecum prolapsed and partially rotated toward umbilicus. Ileum kinked (Fig. 10, C and D) and its arms adherent; appendix free but stiff and injected. Appendix removed, kink relieved and postural, support and feeding treatment instituted. Patient completely relieved and has regained normal flesh.

CASE 4.—Miss A. K., St. Luke's Hospital, Sept. 7, 1910. Distinctly so-called "neurotic type" with general visceral prolapse. Retroversion and prolapse of uterus with pelvic symptoms. Pain in right side with periodic attacks of stomach trouble manifested by nausea, anorexia and gas distention. Operation revealed head of colon covered with a peritoneal membrane (Jackson), and double kink of ileum (Fig. 10, F).

Case 5.—Mrs. P. D., St. Luke's Hospital. Indigestion and pain in epigastric and appendicular region; patient suffered with constipation. Operated on once for loose right kidney. General visceral prolapse; neurotic temperament. Liver and all abdominal organs prolapsed and mesenteries long. A distinct Lane kink obstructing the ileum one-third of its caliber. Apex of kink adherent on the broad ligament. Appendix large and patulous (Fig. 10, E).

Case 6.—Mrs. W., Norwegian Tabitha Hospital. Acquired visceral ptosis. Chronic appendicitis with pain in right side, exacerbated when woman was active; symptoms: nausea, indigestion, anorexia and gas distention. Relieved by horizontal position and rest. Loss of flesh and extremely anemic. Operation revealed stiff adherent appendix beneath prolapsed cecum. Terminal ileum kinked and adherent with fine adhesions.

Case 7.—Miss H. M., St. Luke's Hospital. Operated on two years ago for chronic recurrent appendicitis. Patient only had temporary relief while resting during convalescence. The resumption of perpendicular position precipitated old symptoms of pain in right side, attacks of nausea and depression, with loss of flesh, anemia, anorexia, constipation and distention with gas. Always relieved by prolonged rest and bowel regulation.

Diagnosis: Kink of ileum (Fig. 10, G).

Operation revealed well-marked Jackson membrane. Free head of colon but marked kink of terminal ileum with adhesions; general visceral prolapse. Adhesions severed, kink relieved and postural treatment, abdominal support and feeding, with abdominal gymnastics later, completely relieved patient. Gained flesh and all symptoms relieved.

Fig. 9.—An extreme case with visceral prolapse and abdominal protrusion, restored after six months' management. Patient had extreme kink with definite intestinal stasis. Author's case.

Case 8.—Mrs. H., St. Luke's Hospital, Oct. 15, 1910. Chronic pain in right side. Exacerbated at times with nausea, gas distention, anorexia, extreme constipation. Patient lost flesh; extremely anemic. Always improved with prolonged rest in bed. Operation revealed long retrocecal appendix, adherent kink and adhesions of terminal ileum. Ileum rolled in its mesentery and lumen much narrowed. Relief of kink, severing of adhesions with postural, after-treatment, gymnastics and feeding which gave complete relief. (Fig. 10, H.)

Case 9.—Mrs. C., Hinsdale Sanitarium, Dec. 12, 1910. So-called "neurotic type." General visceral prolapse; extreme intestinal stasis. Pain in right side and exacerbation accompanied with extreme stomach pains, nausea, anorexia and most marked anemia. Patient had previously been operated on for cyst of right broad ligament and appendicitis. Operation revealed general visceral prolapse and a mass of adhesions about terminal ileum and cecum. The terminal ileum was looped, the pelvic loop adherent to broad ligament, and through the loop projected an 8-inch loop of distant portion of ileum (Fig. 10, I). All adhesions unraveled and patient treated by postural support, feeding, and later, gymnastics. Patient improved rapidly and promptly. Stasis and pain relieved; digestive disturbances disappeared. Patient gained rapidly in flesh. Two months later, unfortunately, this patient developed a vaginal abscess, which delayed complete recovery, but, notwithstanding, the improvement was remarkable.

Case 10.—Mrs. L. W. I., Hinsdale Sanitarium (aged 42; five children). For five years a sanitarium invalid. Always received benefit from rest, feeding, horizontal position and regulation of bowels. Has had pain in right side with stomach crises, chronic bowel stasis, considerable loss of flesh after each session. Diagnosis: Chronic appendicitis and Lane kink.

Operation showed general visceral prolapse, chronic appendix beneath a prolapsed cecum and well-marked multiple kinks of terminal ileum with adhesions. Patient relieved of kink, appendix removed and adhesions separated. After-treatment instituted, including immediate Trendelenburg, feeding, and, while convalescing and until the present time, postural treatment with abdominal gymnastics. Patient has gained 15 pounds; symptoms completely relieved; toxemia, anemia and stasis disappeared, and patient now is in best of spirits and health (Fig. 10, J).

Case 11.—Mrs. S., St. Luke's Hospital, March 7, 1911. Acquired visceral prolapse. Large woman; one child. Prolapse; retrodeviation. Had appendicitis during previous year. Lost 40 pounds; still weighs 180. Appendix adherent low in pelvis with prolapsed cecum turned to left and adherent to ileum; kink occurring at pull of mesentery. Appendix removed and adhesions separated; ileum replaced and cecum elevated. Uterus suspended on round ligament (Baldy) (Fig. 10, K).

Case 12.—Mr. H. (medical student). Defective type; general visceral prolapse. Had appendix removed five years ago; general adhesions at that time and extensive sepsis following. Since has had intestinal stasis, gradually getting worse. Cathartics of little avail. Considerable anorexia and much gas. Constant pain in right side between umbilicus and McBurney's point; anemia extreme. Diagnosed own case.

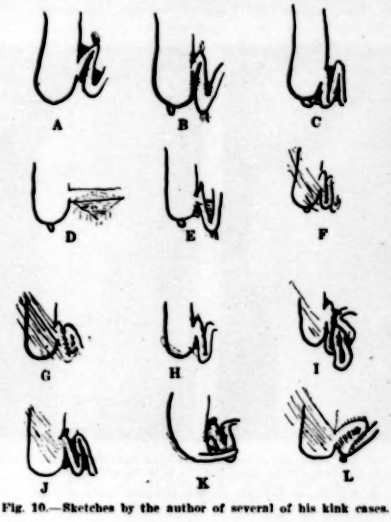

Fig. 10.—Sketches by the author of several of his kink cases.

Operation: Right rectus incision (Fig. 10, L). Cecum low; covered with Jackson membrane but not adherent. Terminal ileum bent acutely 4 inches from its end; apex of bend adherent at bottom of pelvis beneath Poupart's ligament. The two arms of ileum and their two mesenteries firmly adherent for surface of 8 square inches. Adhesions separated and ileum spread out. Patient was treated systematically by posture, bandages and gymnastics in Trendelenburg position. Gained 15 pounds and is now well.

31 North State Street.

ABSTRACT OF DISCUSSION

Dr. W. B. Dorsett, St. Louis: This condition of kinks frequently follows operative procedures. It is not an uncommon thing for the surgeon to say to the patient, "Lie perfectly still." The consequence is that adhesions always occur and frequently produce the condition found in the Lane kink. I have never gone so far as to place my patients in the Trendelenburg position, but have told them that when not in very great

pain they may occupy any position in bed except on their "feet or head."

DR. ARTHUR E. HERTZLER, Kansas City: The pathology of this condition has been described as a "sclerosis mesenterica" by Richter. In the inflammatory condition we have an exudate pushing apart the two layers, including the fibrous tissue of the mesentery. We can predict what will be the subsequent course of an exudate of that kind. When that fibrous tissue develops it contracts. Two years ago I ventured a classification distinguishing between the newly-formed peritoneum, a pseudo-peritoneum and the so-called Jackson membrane, which is nothing more than a dilatation of the subperitoneal vessels. In the first case one may remove one peritoneum and have one left. In the other type, if you remove it, you have no peritoneum left and deprive the organ of its protection.

DR. LOUIS J. HIRSCHMAN, Detroit: Did I understand Dr. Martin to state that in the treatment of this kink, after breaking up the adhesions, the ileum was stitched to the parietal wall?

DR. FRANKLIN H. MARTIN, Chicago: After breaking up the adhesions about the ileum kink if I find that a long mesentery is present on the ascending colon I imitate Nature's way of obliterating the mesentery by stitching the peritoneum of the outer border of the ascending colon to the parietal peritoneum, but I do not attempt to stitch the ileum.

DR. LOUIS J. HIRSCHMAN, Detroit: In case of prolapsed cecum we have been led to believe that by stitching prolapses of the sigmoid flexure, particularly, and following up the histories of cases in which sigmoidal adhesion to the abdominal wall has been performed for the correction of the prolapse, a kink forms following operation just beyond the point where a fixation was made. We have always believed that in these cases of ptosis with elongated mesentery that it was not imitating Nature to suture that to the peritoneum or abdominal walls, but that we should incise the mesentery in a longitudinal direction and sew it transversely, thereby shortening the mesentery, bringing the viscus back to its proper place and not creating any pelvic or peritoneal adhesions where Nature did not intend them.

DR. C. E. BARNETT, Ft. Wayne, Ind.: The question just now is being somewhat investigated as to the interference with the kidney function of the Trendelenburg posture under anesthesia. I should like to ask Dr. Martin whether he has investigated the quantity of urine passed during this posture? It seems to me that our anesthetic hazard is considerable anyhow and that if the kidney is crippled at all, the Trendelenburg posture afterward would be a hazard that one could not risk. Regarding oils in the peritoneal cavity, I hope that their use does good, yet I have never believed in it. I do believe though that Dr. Martin's method of avoiding adhesions would answer better than any other way.

DR. FRANKLIN H. MARTIN, Chicago: In answer to the slightly implied criticism of pexy or fixation of the ascending colon: The large bowel at about the fifth month of embryo life rotates to the right and its whole mesentery becomes attached to the parietes to the right, the posterior layers disappearing after blending with the parietal peritoneum. Now if the cecum or larger bowel has failed to rotate—and it has in many cases—then we are not doing pexy; we are simply imitating Nature's way of obliterating the mesentery. Not only is it theoretically correct, but practically it works.

Honesty, Soul of Research.—The very soul of research, finally, is the highest degree of honesty. The investigator should see clearly and accurately with an eye single to the truth. He has to consider not only the observations which fit his theory, but any others as well. The erratic cases invariably make trouble, but they are often disguised blessings. They may indeed be of far greater moment than those which have been anticipated, for they may point the way to entirely unsuspected facts. After the investigator has completed his examination of a group of questions which have interested him, his leading idea, his tests and his results must be described with scrupulous exactness. In thus reporting his work he should strive to be like clearest crystal, receiving the light and transmitting it, untinged by any trace of color.—Cannon in *Science*.

FINGER PHENOMENON

A NEW DIAGNOSTIC SIGN OF ORGANIC HEMIPLEGIA
(PRELIMINARY REPORT)

ALFRED GORDON, M.D.
PHILADELPHIA

Since Babinski's discovery of his invaluable toe phenomenon as a pathognomonic sign of an organic involvement of the pyramidal tract of the central nervous system, a number of observers have concentrated their attention on various other reflex manifestations. They all, however, have reference to the lower extremities (Oppenheim, Gordon, Shäfer, Mendel-Bechterew, Grasset, Marie, Throckmorton and others). Hoover also described a valuable phenomenon enabling one to distinguish between an organic and functional disability. Here again it is the lower extremity that reveals the differentiating manifestation.

The upper limb has received comparatively little attention in this respect, or speaking more correctly, very few reflex phenomena have been observed and described with reference to the upper limb, which could be considered as indicative of an organic involvement of the cerebrospinal axis. Bechterew's or scapulohumeral reflex and the more recent "inversion of the radius reflex," described by Babinski are practically the only reflex phenomena which, with few exceptions, may be considered of diagnostic value. By no means, however, do the latter possess the clinical importance of the toe phenomenon. The paucity of diagnostic reflex phenomena in the upper limbs is therefore striking.

Fig. 1.—Position of thumb on pisiform body before pressure

Although in the majority of cases there are no special difficulties in recognizing an isolated brachial monoplegia of cerebral origin or a paralysis of an arm, accompanying hemiplegia, nevertheless we encounter now and then isolated cases where the diagnosis of a functional and organic paralysis of an upper limb is made with some hesitation, to say the least.

In a certain small group of cases of hemiplegia dating from infancy, the paralyzed upper and lower limb or one of them (upper) may be free from spasticity and hypertonicity of the muscles, characteristic of ordinary hemiplegia, and present indeed a flaccidity. The latter together with the arrested development of the entire limb (bone as well as muscles), may suggest an old anterior poliomyelitis. In such cases the difficulty of diagnosis may be great, especially when the lower extremity has greatly improved and the upper extremity remained disabled; or when the lower extremity was originally very slightly involved and the largest part of the damage was done to the pyramidal fibers supplying the upper limb (cerebral monoplegia). The need of

some diagnostic signs in cases of the category just mentioned is certainly evident. I have observed the following phenomenon in eight cases of complete hemiplegia.

The forearm of the patient's affected limb is elevated and the elbow is placed on a table. The support of the elbow is, however, not essential. The patient's wrist is then lightly embraced by the examiner's hand, with the thumb against the pisiform bone and the other fingers on the dorsal surface of the wrist (Fig. 1). Or one of the examiner's hands may be placed against the back of the patient's wrist, and thumb of the other hand against the pisiform bone. Pressure is then produced with the thumb against the pisiform body and especially on its radial side. Care must be taken not to produce pressure on the dorsal surface of the wrist where the extensor muscles are located. The fingers are then seen to extend and sometimes also to spread in a fan-like form, as Figure 2 illustrates the phenomenon in one of my patients. In some cases the extension is observed only in the last two fingers, in others, all five fingers extend, and in still others, the thumb and the next two fingers. The extension is sometimes more prompt and more distinct when the ring finger is slightly raised before the test and kept raised during the test. This finger must be supported very gently and in a semi-extended position.

Fig. 2.—Pressure on radial side of pisiform body producing fan-like extension of fingers.

The phenomenon is not very marked in hemiplegias of old standing, in which the contracture of the fingers is very pronounced. In three such cases (not included in the series of eight) I could not obtain this reflex. In six cases of hemiplegia of comparatively recent occurrence, viz.: between two and six months, the reflex was prompt and was obtained at the first attempt. In the remaining two cases the phenomenon was elicited only after two or three tests made in succession. The eight cases examined were present in three children aged between 2 and 13 years, and in five adults. For the purpose of control I examined fifteen normal individuals, four cases of bracial palsy of poliomyelitic origin, and three cases of hysteric hemiplegia. The latter were very striking cases, all occurring after traumatic shocks; the palsy of both arm and leg was complete and rigidity was present. Hemianesthesia of functional type was conspicuous. Although the tendon-reflexes were all increased, Babinski's toe phenomenon was absent. The phenomenon of the fingers described here was absent in every one of them.

The eight hemiplegics, in whom the finger phenomenon was invariably present, do not constitute, of course, a sufficiently large number for generalization. Nevertheless, the continuous presence of the finger phenomenon in them and the absence of the latter in functional cases as well as in fifteen normal individuals warrant me in bringing the phenomenon to the attention of the profession. Further observation on a large number of cases is necessary.

As to the physiology of the reflex, it is well to remember that two muscles are attached to the pisiform bone, viz., flexor carpi ulnaris and abductor minimi digiti. That pressure on the insertions of these muscles should produce an elevation of all the fingers or only of the last two, or of the first three, is certainly an unexpected manifestation. In normal individuals an identical pressure on the pisiform bone (especially on its radial side) produces either no response at all or else a flexion of all the fingers.

An analogy between the finger phenomenon and phenomena observed in the lower extremity is striking. Normally, irritation of the plantar surface causes a flexion of the toes. When the pyramidal tract is involved, extension of the toes will be observed by the same test (Babinski). Normally pressure on the flexor muscles of the leg produces either no response or flexion of the toes. When the pyramidal tract is involved, extension of the toes will follow on the same test (A. Gordon). An identical condition is observed in the mechanism of the finger phenomenon described here: instead of flexion we obtain extension. Similar to the toe phenomenon, the finger phenomenon also strongly indicates an involvement of the pyramidal tract, as apparently it coincides with all other symptoms of a palsy of cerebral origin.

Whether the "finger phenomenon" is constant in hemiplegia, I am unable so far to say, as I have not examined a sufficiently large number of cases. If this phenomenon can be confirmed on a very large number of cases, its importance becomes obvious.

1430 Pine Street.

A CASE OF SPORADIC ELEPHANTIASIS

GILMAN J. WINTHROP, M.D.
MOBILE, ALA.

The case reported below is of interest chiefly because of puerperal thrombophlebitis as an etiologic factor.

History.—Mrs. N., white, aged 48, widow, native and resident of Alabama. No family history of tuberculosis, neoplasm or elephantiasis. Patient had measles, pertussis and varicella as a child. At age of 15, she had a mild attack of erysipelas of the left leg, which lasted a week or ten days and gave no further trouble. Menstruation began at age of 15 and has always been normal. She is the mother of five children, the oldest now 25 and youngest 15 years of age. A healthy, active woman until onset of present condition. Following the birth of her second child, twenty years ago, she developed "childbed" fever and a few days later a "milk leg" of the right limb. A painful, red swelling appeared in the right groin and the right ankle became somewhat swollen and edematous but showed no signs of local inflammation. The swelling about the ankle gradually extended to above the middle of the leg but disappeared, in great part, when the patient remained in bed or kept the leg elevated. Occasionally she suffered intense pain in the leg, usually accompanied by an erysipelatous-like inflammation with chills and fever. The skin exuded a milk-like fluid, which was especially profuse if the skin was bruised or broken, as not infrequently occurred. About ten years ago she noted that the leg was becoming gradually harder and the skin thicker and nodulated. The swelling no longer decreased when she was in bed or elevated the limb. This hardening of the tissues and thickening of the skin has slowly increased and extended toward the knee.

Examination.—The patient is poorly nourished; thoracic and abdominal organs are apparently normal. The right leg

below the knee is enlarged, firm and indurated. The skin is thickened and nodulated, especially on the posterior surface of the limb. The sole and dorsum of the foot are not involved, but behind, the hypertrophy begins at the heel and merges into the growth above. Between the folds of hypertrophied skin the surface is foul from moisture and exfoliated epithelium. An eroded area on the inner and posterior part of the growth exudes a serous fluid. The blood shows no filaria after repeated examinations, and the cellular elements and hemoglobin are about normal. The urine is normal.

It would seem that the thrombophlebitis following labor produced chronic edema of the leg or by its extension caused an obliterative inflammation of the lymph-channels about the vein, with resulting lymph stasis. The persistent lymphedema produced a gradual connective-tissue hypertrophy with enlargement and induration of the limb.

Elephantiasis of the leg.

The nodular hypertrophy of the skin and subcutaneous areolar tissue is well shown in the photograph.

204 Conti Street.

For Untrammeled Health Officials.—Mrs. Caroline Bartlett Crane, speaking before the Illinois Woman's Press Association on "Common Problems of American Cities," emphasized particularly the need of an untrammeled health department in every city, with a well-paid health officer who could not be deposed or his work rendered useless by the will of some political boss. Mrs. Crane urged all members of the association to interview personally any health officer accused of inefficiency and ascertain if he were hampered in his work, if he had proper facilities for performing his duties and a sufficient number of assistants.

THE USE OF REBREATHING IN THE ADMINISTRATION OF ANESTHETICS *

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BALTIMORE

Since the very introduction of ether and chloroform the use of rebreathing in administering them has been under discussion. With chloroform it has seldom been permitted, while with ether until recent years it was considered desirable,[1] and ether was given almost exclusively by means of a closed inhaler of some sort. Since the introduction of the open method of etherization, however, rebreathing has fallen into disfavor, and writers now pretty generally condemn it.[2] It is my purpose to show that, contrary to this common opinion, rebreathing when properly regulated and when the oxygen supply is ample is harmless and can be put to a valuable use. The evidence in favor of this is derived partly from a series of 2,500 gas-oxygen and gas-oxygen-ether anesthesias given by a closed method at Professor Halsted's clinic, and partly from the recent and very important work of

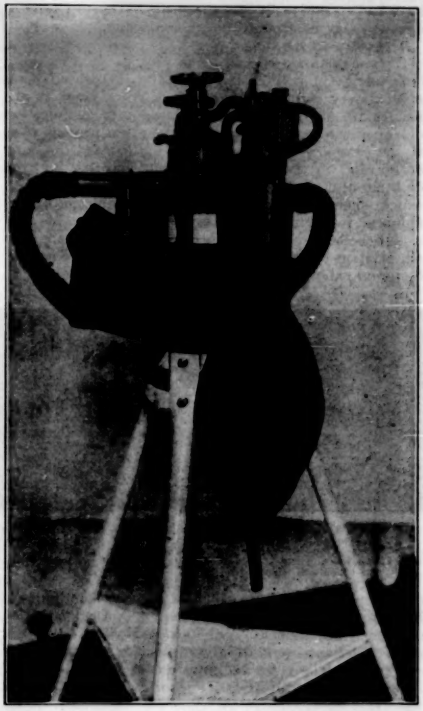

Fig. 1.—Apparatus for administration of anesthetic.

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

1. Hewitt: Anesthetics and Their Administration, Ed. 3, p. 329.
2. Cunningham and Anderson: Methods of Administering Ether, THE JOURNAL A. M. A., Nov. 7, 1908, p. 1574.

the physiologists — Henderson,[3] Hill,[4] Haldane[5] and others — on the carbon-dioxid metabolism of the body. In a preceding paper[6] I have discussed the use of rebreathing in giving nitrous oxid with oxygen; here I wish to consider its use in administering any inhalation anesthetic, and more especially ether.

The subject can be approached most simply by considering the harmful results supposed to follow the administration of ether by the use of closed masks. I shall speak only of ether for the present, because most of the investigations bearing on the question of rebreathing have had to deal with this anesthetic. The ill effects in question may be grouped under two heads:

1. Injury to the lungs.
2. General toxic effects.

Dreser,[7] Offergeld,[8] Poppert[9] and Hölscher[10] have studied very carefully the effects of ether vapor on the respiratory passages. Dreser regards any concentration of vapor which cannot be inhaled by the patient while in the conscious state without discomfort and coughing as harmful to the lungs. Applying this test, he fixed on 6 per cent. to 7 per cent. as the highest concentration which should be used. Offergeld, experimenting on animals, found that the lungs after etherization by a closed method showed much graver injuries than after etherization by an open method. With the closed method he found extensive fatty degeneration and desquamation of the epithelium of the air-passages, also many minute hemorrhages into the alveoli; many of the animals died of bronchopneumonia. With the open method the pulmonary lesions were of a comparatively unimportant character, unless the administration was frequently repeated at short intervals. Poppert, whose experiments were similar to Offergeld's, concluded that ether vapor is more irritating to the lungs the greater its concentration. Hölscher studied the distribution of secretion in the air-passages during ether narcosis. He found that there is only a very slight secretion from the epithelium situated below the level of the larynx. By putting coloring materials into the mouths of anesthetized animals he proved that mucus and saliva may be aspirated into the deepest air-passages. His conclusion was that "affections of the air-passages occurring after ether are for the most part due to the aspiration of infectious mouth contents."

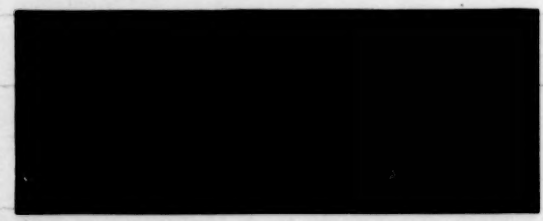

Fig. 2.—Tracing obtained from the pyloric ring of a frog suspended in a moist chamber into which ether vapor and carbon dioxid could be passed. At C, carbon dioxid was passed over the muscle, causing a sharp contraction. At E, very dilute ether vapor was turned on with the carbon dioxid, causing immediate relaxation. At E, the ether was turned off.

We can summarize the experimental results dealing with the effects of ether vapor on the lungs as follows:

1. The irritant action of the vapor varies according to its concentration.

2. Postoperative lung complications are frequently caused by the aspiration of mouth contents.

3. The greater severity of the pulmonary lesions found after experimental etherizations by the closed method can be satisfactorily accounted for by the great concentration of ether vapor in the closed masks and the greater liability to aspirate mouth contents when these are used.

We now have to consider why the general toxic effects which follow ether anesthesia are more severe after the closed method than after the open method. Writers are almost unanimous in asserting that they are so. The work of Ladd and Osgood[11] is very important in this connection. These authors studied the frequency of postanesthetic vomiting in patients after etherization with the Blake cone and in those etherized by the "gauze ether" method. Vomiting was much more frequent and severe among the former patients than among the latter. With the Blake cone cases they found acetone in the urine after operation in 88 per cent. of the cases, while with the "gauze ether" cases they found it in only 26 per cent. The technic and advantages of the open method are discussed by Miss Magaw,[12] who reports 14,000 cases with most satisfactory results. In short, there is no doubt that this method of etherization is better than the rather crude closed methods it has replaced. Of its disadvantages and dangers I shall speak later.

To what causes are the ill effects which follow the closed method to be traced? The causes commonly held responsible are the following[2]: (1) anoxemia, (2) over-concentration of ether vapor, (3) toxic organic substances in the expired air, and (4) excess of carbon dioxid an the expired air. The first and second of these possible causes are, I believe, the real ones. The third is imaginary, since the physiologists have demonstrated beyond any reasonable doubt that there are no organic poisons in the breath.[13] Concerning the excess of carbon dioxid, it is the purpose of this paper to show that it is harmless, and can be put to a valuable use.

It is perfectly evident that anoxemia and overdosage of ether, evils almost unavoidable when this anesthetic is given in a tightly closed mask, must do harm. We know that a deficiency of oxygen will quickly cause the gravest injuries to the tissues. Dreser found that the gas within closed etherizing masks would at times put

3. Henderson: Acapnia and Shock (a series of papers), Am. Jour. Physiol., 1908, xxi, 126; 1909, xxiii, 345; 1909, xxiv, 66; 1910, xxv, 310; 1910, xxv, 385; 1910, xxvi, 260; 1910, xxvii, 152.
4. Hill and Flack: The Effect of Excess of Carbon Dioxid and of Want of Oxygen on the Respiration and the Circulation, Jour. Physiol., June 30, 1908; The Influence of Oxygen Inhalations on Muscular Work, Jour. Physiol., July 1, 1910.
5. Haldane and Poulton: The Effects of Want of Oxygen on Respiration, Jour. Physiol., 1908, xxxvii, 390.
6. Gatch: Nitrous Oxid-Oxygen Anesthesia by the Method of Rebreathing, THE JOURNAL A. M. A., March 5, 1910, p. 775.
7. Dreser: A Contribution to the Study of Anesthesia by Ether, Bull. Johns Hopkins Hosp., January, 1895.
8. Offergeld: Lungenkomplicationen nach Aethernarkosen, Arch. f. Chir., 1907, lxxxiii, 505.
9. Poppert: Experimentelle und klinische Beiträge zur Aethernarkose und zur Aether-Chloroform-Mischnarkose, Deutsch. Ztschr. f. Chir., lxvii, 505.
10. Hölscher: Experimentelle Untersuchungen über die Entstehung der Erkrankungen der Luftwege nach Aethernarkose, Arch. f. klin. Chir., 1898, lvii, 175.
11. Ladd and Osgood: Gauze Ether, Ann. Surg., September, 1907.
12. Magaw, Alice: A Review of Over 14,000 Cases of Surgical Anesthesia, Surg., Gynec. and Obst., 1906, iii, 795.
13. Crowder, Thomas R.: A Study of the Ventilation of Sleeping-Cars, Arch. Int. Med., Jan. 15, 1911, p. 85; Haldane and Smith: The Physiologic Effects of Air Vitiated by Respiration, Jour. Path. and Bacteriol., 1892 and 1893, pp. 1, 168, 318; Heyman, Paul, Erclents, Flügge: Report of Experiments at the Institute of Hygiene at Breslau, Ztschr. f. Hyg., 1905, xlix, pp. 363, 388, 405 and 433; Hill and Walker: The Relative Influence of the Heat and Chemical Impurity of Close Air, Jour. Physiol., Nov. 9, 1910.

out a burning candle! He also found that the ether vapor within the closed masks sometimes reached a concentration as high as 34 per cent., while 6 to 7 per cent. is the greatest concentration which can be inhaled without irritation to the air-passages. With such an overdosage of ether as this it is true that the excess of carbon dioxid within the closed masks is injurious, for it stimulates powerfully the respiration and leads quickly to an overabsorption of ether by the blood.

If the truth of what has just been stated be admitted; it follows that if we can prevent anoxemia, overconcentration of vapor, and too great a depth of anesthesia, we can obviate most of the serious objections to the closed method of giving ether.

I have so far limited the discussion to the administration of ether, but it will apply, in part at least, to all anesthetics given by inhalation—to chloroform, ethyl chlorid and nitrous oxid. With all of these it is evident that anoxemia must be prevented. With chloroform and ethyl chlorid, on account of their great toxicity, overdosage is the most important problem in administration. With nitrous oxid, in the absence of asphyxia overdosage is impossible. Ether requires a special consideration on account of the peculiar irritant action of high percentages of its vapor on the lungs and air-passages.

I have made use of the principles laid down in the foregoing paragraphs in developing a method of anesthesia, the technic and advantages of which I now wish to describe. Nitrous oxid and, if necessary, ether are the anesthetics used. The apparatus employed[14] consists essentially of a mask connected by a piece of flexible tubing to a rubber bag. This forms a closed space into which the patient breathes. On the mask is a valve-box by means of which the patient can be made to breathe to and fro into the bag, or to inspire from the bag and expire into the air, thus emptying the latter. The bag is attached to a small box, through which the current of gas must pass back and forth from the bag to mask. Into this box nitrous oxid and oxygen are admitted, and ether, drop by drop, from a receptacle above. The ether is vaporized in the box from a series of drip plates, and any excess of ether can be drained off at once by a stopcock. The method of administration is simple. The mask is adjusted carefully to the patient's face and the bag filled with nitrous oxid containing a very small amount of oxygen. The patient is made to breathe this mixture in and out through valves, thus replacing all the air in his lungs with nitrous oxid and oxygen. The bag is next refilled with the same mixture of gases which the patient is now made to rebreathe for from five to eight minutes. At the end of this time he is allowed to empty the bag, breath by breath, into the air, after which it is refilled, and the same procedure is repeated. Oxygen is given, without any attempt to estimate its exact percentage to the nitrous oxid, in quantities just sufficient to keep the patient's color free from cyanosis. If desired, nitrous oxid can easily be given under positive pressure, by keeping the bag slightly overdistended. This is sometimes a useful procedure in managing difficult cases. Anesthesia is usually established in less than two minutes. If the anesthesia is unsatisfactory with nitrous oxid alone, ether is added. This combined nitrous oxid-ether anesthesia has many points of practical and scientific interest and calls for a special consideration.

Ether is not given till the patient's respiration has been stimulated by the accumulation of carbon dioxid which results from the rebreathing. It is then added drop by drop. The heated gases quickly evaporate it from the drip plates, and it is rapidly absorbed by the blood because of the increased pulmonary ventilation. The most difficult subjects can thus be deeply anesthetized.

I have already referred to Dreser's experiments in which he proved that from 6 to 7 per cent. of ether vapor is the greatest concentration which can be inhaled by a patient in the conscious state without irritation and coughing. Precautions must be taken to keep the concentration of ether vapor in the mixture of gases below this level if we wish to do away with any possibility of injuring the lungs. This is quite easily accomplished, as the following simple calculation will show. The gas-bag moderately distended holds about 10 liters of gas, the mask and tubing hold about 1 liter, and the entire respiratory system of the patient holds about 3 liters. When the patient is rebreathing, these all form one closed space with a total capacity of about 15 liters. Our problem is this: How much ether must be added to 15 liters of gas to make the concentration of ether vapor 7 per cent.? Professor Abel has very kindly performed this calculation for me and gives the amount of ether as 4.2 c.c. He desires me to state, however, that the conditions of the problem are so variable that the amount of ether required cannot be determined with absolute accuracy. The varying temperature in the apparatus, the loss of ether through leaks and by absorption in the lungs are factors for which no accurate data can be furnished. But absolute accuracy is not necessary, because the constant loss of ether gives us a wide margin of safety so that we can probably add ether much faster than our calculation allows without exceeding the danger limit.

With the drops of ether falling at the rate of 120 to the minute I have found that it takes two and one-quarter minutes to add the 4.2 c.c. Therefore, if we give ether at this rate and take precautions not to keep it dropping for more than two minutes at any one time, and to keep the bag constantly full of gas, we can be sure that the ether vapor will not reach a concentration greater than 7 per cent. If the anesthetist does not care to follow some such rule as this he can easily, and I think with perfect safety to his patient, estimate the strength of ether vapor by its odor as it escapes from the valve-box. In fact, ether is usually given for so short a time that even if it were administered in a somewhat concentrated form it would probably do no harm.

It has been found unnecessary to give ether constantly during the administration. When enough has been given to produce satisfactory anesthesia, this can be maintained with nitrous oxid alone, even in cases requiring a deep narcosis. This is to be explained by the fact that the rebreathing prevents the ether, once dissolved by the blood, from being thrown off as rapidly as it would otherwise be by the lungs, which are the organs by which it is practically all eliminated.[15] Suppose, for example, that a patient having a certain amount of ether dissolved in his blood is given some fresh nitrous oxid and oxygen to rebreathe. The ether will be thrown off from his lungs till the tension of its vapor in the gases

14. I have already described the apparatus elsewhere in some detail (Note 6). It will be noted that the arrangement for giving ether has been changed so as to permit of a more accurate dosage. The method of administration is practically unchanged, except that I now allow rebreathing for somewhat longer intervals

15. Hewitt: Anesthetics and Their Administration, Ed. 3, p. 50; Cushny: Pharmacology and Therapeutics, Ed. 4, p. 166; Cushny: The Exhalation of Drugs by the Lungs, Jour. Physiol., xl. 17; Nicloux: Elimination de l'éther contenu dans le sang après l'anesthésie pendant la période de retour, Cont. rend. Soc. biol., 1907, i, 8.

being breathed will equal that in the blood. When this occurs no more ether will be eliminated until a new supply of gas is furnished.

Not only can we prevent the elimination of ether by rebreathing, but we can also hasten the elimination by a rapid ventilation of the lungs with fresh gas. During the process of rebreathing, carbon dioxid accumulates in the body and stimulates the respiratory center so that the breathing becomes deep and rapid — often fifty or sixty respirations to the minute. When a patient, anesthetized in the way I have described and breathing at such a rate, is given a fresh supply of gas and allowed to discharge each breath into the air, he apparently rapidly rids himself of the small dose of ether he has been given. Thus it is possible to anesthetize a patient so deeply that he will not stir during a Whitehead operation, and yet have him conscious before leaving the operating room. By careful administration we can in most cases keep the patient from knowing that he has been given any ether at all, so complete and rapid is its elimination.

I would suggest that this method of removing a volatile anesthetic by rapid ventilation of the lungs be used at the close of every administration of chloroform or ether. The increased pulmonary ventilation can be easily brought about by making the patient breathe in and out, through valves, air or oxygen containing a small percentage of carbon dioxid. I have had such a mixture of oxygen and carbon dioxid prepared which contains 7 per cent. carbon dioxid, but have not had the opportunity to give it a clinical trial.

In this connection it is interesting to consider the effect which morphin has on the elimination of ether or chloroform from the body. Morphin decreases markedly the rate of pulmonary ventilation.[16] Large doses of it must therefore retard the elimination of the anesthetic and thus increase its toxic action. It is often possible to detect the odor of ether or chloroform on the patient's breath for several hours after operation. This slow excretion may be due, in part at least, to the morphin, a hypodermic of which is necessary before or after almost every anesthesia. Perhaps this effect of morphin can be prevented by means of the method I have just described for quickly eliminating the anesthetic.

In the preceding paragraphs I have discussed how ether can be safely introduced and speedily removed from the patient's system. During its stay therein we are powerless to prevent its toxic action. By giving it, however, in combination with nitrous oxid and morphin we can reduce its dose, and therefore its ill effects, to the minimum, since the major portion of the anesthesia is produced by the other two drugs. It is probable also that the effect of ether when thus administered with other narcotics is relatively much greater than when given alone, as it is well known that narcotic drugs given in combination reinforce one another's action.[17] Thus the powerful joint effect of morphin and scopolamin has been explained.

I shall devote the remainder of this paper to matters of direct clinical interest. The form of anesthesia herein described has now been in use in the surgical clinic of the Johns Hopkins Hospital for two years. Here over 2,500 patients have been anesthetized by this method. It is now our routine form of anesthesia for all operations except those on the face, upper air-passages or cranium. In these we have found it inconvenient on account of the difficulty of keeping the mask in place.

Before operation the patient is given an enema and deprived of food for several hours, but is allowed to take small quantities of water. About thirty minutes before the anesthesia is begun he is given a hypodermic of morphin and atropin, the dose for an adult being morphin one-sixth grain, atropin 0.01 grain. The anesthesia is started after the patient has been placed on the table and while the field of operation is being surrounded by sterile towels. It is established so quickly that the incision can usually be made in two minutes after the mask has been put on. Any depth of anesthesia which the condition of the patient and the nature of the operation may require can be easily obtained, because of the control of the patient's respiration which is given by the rebreathing. In abdominal operations, if the increased activity of the respiration is inconvenient, it can be prevented by giving a fresh supply of gas at frequent intervals. The bleeding during gas-oxygen or gas-ether anesthesia is about the same as during open ether anesthesia. The patient's temperature, provided he is kept dry and covered, will be found elevated from 0.5° to 2° after an hour's operation. With light narcosis under nitrous oxid and oxygen alone, the pulse may be rapid (from 140 to 160 to the minute) but this is of no significance provided it is regular and of good quality, and there is no hemorrhage. The rapid heart-rate decreases when ether is given.

This form of anesthesia is especially well suited for long operations. In fact the anesthesia does the patient so little harm that within reasonable limits the duration of the narcosis need not be considered. The surgeon can therefore operate with a deliberation and attention to detail that would otherwise be unjustifiable. The following typical cases show the truth of this contention:

Case 1.—The patient was a negro man, aged 27, in good physical condition. Operation: Excision of a sarcoma from the right popliteal space, and blood-vessel transplantation. Duration of anesthesia, five hours. The pulse-rate per minute varied from 72 to 100. The blood-pressure at the end of four hours of anesthesia was 130 mm. of mercury. The patient regained consciousness before leaving the table. He had no headache, nausea or vomiting, though he was given water at once. His urine after operation contained no albumin or acetone. He was allowed to rebreathe at two and one-half and three-minute intervals. The narcosis was deep and quiet. Ether was given with the gas for the first half hour.

Case 2.—The patient was a white woman, aged 30, in rather poor condition. Operation: Resection of the ascending and transverse colon. Duration of anesthesia two hours and five minutes. No ether was used. The narcosis was light, the patient at times moving her limbs. Recovery was immediate and unattended with headache or vomiting.

Case 3.—The patient was a colored woman, aged 30, in good condition. Operation: Excision of the right breast, pectoral muscles and axillary glands for advanced cancer of the breast, Thiersch skin grafting of the raw surface of the breast. Duration of anesthesia, three hours and fifty-five minutes; 2½ ounces of ether, 130 gallons of gas and 30 of oxygen were used. The anesthesia was quiet and satisfactory, the recovery immediate and without headache, nausea or vomiting.

I could report many more cases similar to the above, but these show sufficiently well how little the patient is injured by this form of anesthesia. A word of caution is, however, necessary. This is that during any administration, and especially during a long administration, the patient's breathing must be kept free and unobstructed, and his color good. If a patient has to work hard for every breath he soon wears himself out. The color of

16. Cushny: Pharmacology and Therapeutics, Ed. 4, p. 211.
17. Pühner: Pharmakologische Untersuchungen über die Mischnarkose, München. med. Wchnschr., 1911, No. 4; Bürgo: Die Wirkung von Narkotikakombinationen, Deutsch. med. Wchnschr., 1910, Nos. 1 and 2, pp. 20 and 62.

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the blood in the wound, the hue of the patient's face, and the character of his breathing as shown by the movements of the rubber bag are the best indicators of his condition. The surgeon himself can hardly fail to notice these. If the patient's breathing cannot be kept unobstructed the use of the apparatus should be abandoned at once and some other method of anesthesia used.

We have had three fatalities, during or immediately after operation, in our series of 2,500 cases. How much the anesthesia was to blame for these may be judged from the following reports:

FATALITY 1.—The patient was a colored woman, aged 44, with exophthalmic goiter of four years' standing. She had an irregular, intermittent pulse, the rate of which had been between 120 and 140. Her heart was enlarged, and she had ascites and edema of the ankles. During the last week of her life she had several severe attacks of dyspnea, associated with extreme rapidity and irregularity of the pulse. For these she was given a course of digitalis, which improved her condition so much that it was thought she could withstand a partial thyroidectomy. When the mask was placed over her face, she made a very slight struggle and took several shallow breaths. The operator then saw the superficial veins of her neck suddenly dilate. This apparently marked the time of death, and occurred within half a minute of the time the anesthetic was started.

FATALITY 2.—The patient was a man with aortic and mitral insufficiency, on whom it was proposed to do a perineal prostatectomy. He was given ether with the gas and oxygen. The anesthesia went very well till the patient was placed on the perineal table with his buttocks elevated; then he became cyanotic and died. An immediate autopsy revealed the presence of a large pericardial effusion, the presence of which had not been recognized before operation.

FATALITY 3.—The patient was a girl of 16, with multiple infectious arthritis; general condition poor. Operation: Injection of both knees with oil and manipulation of knees, ankles and elbows. Duration of anesthesia fifteen minutes. The anesthesia was uneventful, except for a marked increase in pulse-rate while each joint was being manipulated. At no time was the breathing obstructed. At the close the pulse-rate went up very rapidly; the color became cyanotic and could not be cleared up with oxygen. The breathing became weaker and weaker and finally ceased.

An autopsy showed a very large thymus and hypertrophy of all the lymphatic tissues. The pathologists gave status lymphaticus as the cause of death.

The first and second of these patients had circulatory disease of such gravity that the anesthesia is not to be seriously blamed for the deaths. How the third fatality was brought about I am at a loss to understand. The toxicity of nitrous oxid is certainly too low to have caused it.

Notwithstanding these fatalities I believe that this form of anesthesia properly employed is well suited for cardiac cases. Two cases of cesarean section performed by Prof. J. W. Williams on women with serious valvular lesions will show the grounds for this belief. Both women were in about the seventh month of pregnancy, and in both delivery was necessary to save the life of the patient. One of the two was *in extremis* and her death on the table was regarded by the operator as probable. Both women had such urgent dyspnea that the anesthetic had to be started with the patient sitting upright. The same method of administration was employed in both cases. Each patient was given a hypodermic of morphin large enough to quiet her. In inducing anesthesia great care was exercised to avoid the least excitement or struggling on the part of the patient. Both were allowed to rebreathe oxygen till the respiration was stimulated before any nitrous oxid was given. Enough ether was used to give a quiet anesthesia. The operations were performed with the patients' bodies elevated at an angle of 20° to 30°. The pulse of both patients was much better during anesthesia than before, and the operator was able to proceed without undue haste. Both patients made an excellent recovery.

I have hitherto spoken of the advantages of an excess of carbon dioxid in the blood — a hypercapnia — during anesthesia. Our clinical experience has certainly shown that this, to the degree we permit, is harmless. Hill and Flack[4] state that "the effects of carbon dioxid on the heart can always be quickly recovered from, even if the blood-pressure has sunk to zero." These authors found that carbon dioxid up to a percentage of 35 in the air breathed stimulates the respiration, while above 35 it depresses it; also that percentages up to 22 produce a rise in blood-pressure, while higher percentages cause a fall. Of course it is impracticable to determine exactly what percentage of carbon dioxid a patient is breathing. The anesthetizer must regulate the time of rebreathing so that the patient's respiration is moderately stimulated. The periods of rebreathing for 10 liters of gas range from three to five minutes, any leakage from the apparatus being meanwhile made good by the addition of fresh gas.[18]

Does a deficiency of carbon dioxid in the blood —acapnia —do serious harm? The work of Henderson[5] on this problem is so well known as to require no more than a reference here. He has been able to reduce animals to a state of extrême shock by overventilation of their lungs. He asserts that acapnia causes complex osmotic changes in the tissues, which result in a passage of water from the blood into the lymph and into the tissue-cells and a dilatation of the finer veins. Interference with the normal filling of the right side of the heart by this process is the essential phenomenon in surgical shock. In extreme cases of acapnia the blood-stream is so scant and the respiration so feeble that the tissues do not receive the necessary amount of oxygen. An asphyxial acidosis results which does the body-cells irreparable injury. Whether we accept Henderson's theory or not we must admit that the accumulation of carbon dioxid by the process of rebreathing is an efficient stimulus to the respiration and circulation. In fact we use it as a purely therapeutic measure in cases of morphin poisoning, in cases of so-called traumatic or toxemic shock,[19] and wherever the respiration is feeble.[20] Oxygen can be given much more effectually and cheaply by the use of rebreathing than in the ordinary way. Thus with anesthetics of low toxicity and the use of rebreathing we can sometimes actually benefit a very ill patient by an anesthesia.

On the other hand, when we give ether by the open method we take a very efficient means of producing acapnia, because ether diminishes the formation of carbon dioxed by the tissues, and by stimulating the respiration hastens its elimination as well. Symptoms of a mild grade of acapnia under open ether anesthesia are common. Thus a patient who has perhaps been difficult to anesthetize or who has been lightly under ether for some time and is breathing at a rapid rate will gradually stop breathing. After an interval of perhaps two or

18. After rebreathing 10 liters of oxygen for three minutes, I found it to contain 8.9 per cent. CO_2. Allowing for decreased CO_2 formation during anesthesia, it is probable that the percentage breathed by the patient is seldom above this.

19. Patients with feeble pulse and respiration—so-called "shock" cases—should be made to rebreathe air in oxygen till their respiration is normal before breathing the anesthetic.

20. Levi, Ettore: Studies on the Patho-Physiologic Action of CO_2 and on the Therapeutic Applications in Surgery and Medicine of Mixture of O_2 and CO_2, Estr. d. Rev. crit. di clin. med., 1910, xi, 30 and 31.

three minutes his respiration will start again but will not be normal for a long time. This occurrence, though alarming, is usually followed by no harmful results. Of course hundreds of patients are etherized daily by the open method without developing symptoms of shock. What prevents a serious grade of acapnia in the great majority of cases? There are a number of things which do so. In the first place many anesthesias are of too brief duration for acapnia to develop. Then again there is frequently more or less obstruction to the breathing during narcosis, and this prevents acapnia. Likewise the slowing of the respiration which results from a preliminary hypodermic of morphin may protect from the same danger.[21] Finally, the so-called "open" method is usually not "open" at all, for the mask is so covered with towels or gauze that the patient does considerable rebreathing.

It is a pity that in a case like the following accurate determination of the amount of carbon dioxid in the blood could not be made, so that we could judge whether or not death was due to acapnia:

The patient was a well-nourished middle-aged woman, with no disease of the heart or blood-vessels, on whom a colostomy and an excision of the rectum was done for a carcinoma. The anesthesia was by the "drop ether" method and was of two hours' duration and rather light. The patient's breathing was rapid and carefully kept free from obstruction. There was practically no loss of blood and but little trauma connected with the operation. The patient never regained complete consciousness, though she could respond feebly when spoken to. Her pulse was rapid and of poor quality; her temperature subnormal, her color slightly cyanotic and her respiration very feeble. She never rallied, and died eight hours after operation. An autopsy showed no apparent reason for death, which was attributed to surgical shock.

Is it not possible in this case that an acapnia had produced fatal injuries to the tissues in the manner described by Henderson?

Apart from the prevention of acapnia the form of anesthesia I have described has several other advantages over open ether anesthesia. The chief of these are three: (1) lessened postanesthetic vomiting; (2) decrease in number of cases of abdominal distention after operation; (3) practical abolition of postanesthetic lung complications.[22]

Vomiting after operation, of course, depends on many things besides the anesthetic. About 35 per cent. of our patients vomit, but the vomiting is usually very little. In looking over the special charts of 200 patients I found only four who had had more than very transient vomiting. Of the cases one was a case of exophthalmic goiter, one a case of stone in the common bile-duct, one a case of spreading peritonitis from an appendix abscess, and one a case of intestinal resection. The nausea alone seldom prevents a patient from taking water and nourishment at once after operation.

There has been very little experimental work on the question of abdominal distention following ether anesthesia. Cannon and Murphy[23] observed a great delay in the emptying of the stomach contents into the duodenum, and a slowing of the passage of food along the intestines after etherization. Figure 2, which is a tracing obtained from Dr. D. R. Hooker,[24] demonstrates the paralyzing effect of a weak ether vapor on the pyloric ring of the frog. It also shows that carbon dioxid acts as a powerful stimulant to the muscle of the ring. Of course the conditions to which the bowel was subjected when this tracing was obtained were abnormal, still the paralysis by ether is exactly what any clinician would expect. It is well recognized that an excess of carbon dioxid in the blood promotes peristalsis, and Henderson[25] has shown that the normal intestinal movements, which cease after a laparotomy, can be restored by passing a stream of carbon dioxid over the exposed bowel. These experimental results are confirmed by our clinical experience. It will be recalled that we use the smallest possible amount of ether, and produce a hypercapnia by making the patient rebreathe. In the 200 cases referred to above there was not a case of abdominal distention except after laparotomy, and among the laparotomies, seventy-five in number, it occurred in but three cases, these being the same patients who had considerable vomiting.

In 2,500 cases of gas-oxygen or gas-oxygen-ether anesthesia we have had but one case of postanesthetic pneumonia; this was in a girl with general peritonitis, who recovered. I am perfectly aware that this absence of pneumonia has been partly accidental, since pneumonia after operation may be due to causes other than the anesthetic. The record is, however, striking, and all the more so because we have anesthetized without hesitation, in cases of pulmonary tuberculosis, bronchitis and empyema. It contrasts markedly with the record after open ether. Here in a series of 400 cases we have had one death from ether pneumonia, and two deaths, one with autopsy, from acute pulmonary tuberculosis.[26] The latter patients were both operated on for tuberculous glands of the neck. Both patients died rather late — in from two to three weeks — after operation,

21. Crile: The Blood-Pressure in Surgery, p. 281.

22. Homans: Post-Anesthetic Pulmonary Complications, Bull. Johns Hopkins Hosp., April, 1909.

23. Cannon and Murphy: The Movements of the Stomach and Intestines in Some Surgical Conditions, Ann. Surg., April, 1906, xl:1, 513.

24. I wish to thank Dr. Hooker for permission to publish this tracing and for the following note:

"Dr. Gatch has asked me to add a note covering some unpublished experiments done in the physiologic laboratory of the Johns Hopkins University, which appear to have a direct bearing on his own work.

"Cross-sections of blood-vessels or intestine, to which a recording lever was attached, were hung in a moist chamber. In the case of tissue from warm-blooded animals the temperature of the chamber was maintained constant at 35 C. Through the chamber were passed alternately streams of oxygen and carbon dioxid gas. By this method the tissue studied was exposed to practically pure atmospheres of the gases. The experimental conditions, therefore, did not fall within physiologic limits, so far as the percentage of gas is concerned. Work is now in progress to investigate the effect of different percentages of oxygen and carbon dioxid. Aside from the result of this future work, however, the interesting fact has been demonstrated that the musculature of the blood-vessels responds in atmospheres of the gases, studied in an exactly opposite manner to the musculature of the intestines. Carbon dioxid causes a marked improvement in the tone of the intestines and a marked relaxation of tone in the veins and arteries. On the other hand, oxygen causes a relaxation of tone in the intestines and an improvement of tone in the veins and arteries. These results were obtained in the case of both warm-blooded and cold-blooded animals and demonstrated with graphic records.

"If it be true that Henderson reasoned by analogy from the behavior of the smooth muscle in the intestine to that in the blood-vessel (especially the veins) in developing the acapnia theory of surgical shock, it is obvious from these results that his reasoning was not entirely justifiable.

"The correlation of the difference in action of these gases in physiologic economy tempts speculation. The body seeks to rid itself of any excess of carbon dioxid. Jerusalem and Starling (Jour. Physiol., 1910, xl, 270) have shown that carbon dioxid (0.625 of an atmosphere) increases the efficiency of the isolated mammalian heart chiefly by improving its diastolic relaxation. Bayliss (Jour. Physiol., 1901, xxvi, 32) has shown that this gas relaxes vascular tone. It has long been known that in the intestine the same gas increases peristalsis and Mall (Johns Hopkins Hosp. Rep., 1896, i, 37) has suggested that rhythmic movements of the intestines may help to empty the venous plexuses in the walls and thus aid in driving the blood into the portal system. We have, therefore, a coordination of activity which greatly facilitates the circulation of blood and the consequent rapid elimination of the carbon dioxid. Oxygen in excess, on the contrary, would tend to bring about opposite effects with a resultant retardation of the circulation.

"In conclusion, it should be clear to the reader that this is a chemical regulation of the circulation entirely peripheral in its action. The action of the gases on the medullary centers is a wholly different question."

25. Henderson: Shock After Laparotomy, Its Prevention, Production and Relief, Am. Jour. Physiol., 1909, xxi, 60.

26. Walsh: Chloroform Rather Than Ether Anesthesia in Tuberculosis, THE JOURNAL A. M. A., Aug. 28, 1909.

but they ran a high temperature from the first. It was the opinion of Dr. L. V. Hammond, who has charge of the work on tuberculosis at the Johns Hopkins Hospital, that the etherization had lighted up small apical foci of disease undetected before operation.

In closing I do not wish to leave the impression that this form of anesthesia is free from danger. It is without danger so far as postoperative effects are concerned. During the administration, however, there are dangers, though these can always be prevented by careful and skilful administration, and arise from causes which can generally be foreseen. The method should not be used except by those who have made a special study of its problems.

SUMMARY

1. Rebreathing, when properly regulated and when the oxygen supply is ample, is harmless and can be put to a valuable use.

2. If we can prevent anoxemia, overconcentration of vapor and too great a depth of anesthesia, we can obviate most of the serious objections to the closed method of giving ether.

3. The process of rebreathing prevents the elimination of ether and chloroform by way of the lungs, and overventilation of the lungs hastens the elimination.

4. It is suggested that after any administration of ether or chloroform, overventilation of the lungs be brought about by the use of mixtures of oxygen and carbon dioxid.

5. Morphin, or any drug which depresses the respiration, retards the elimination of ether or chloroform.

6. A method of administering nitrous oxid and if necessary ether with oxygen by the method of rebreathing is described and its advantages and dangers discussed.

Its chief advantages are (1) the rapidity and pleasantness with which anesthesia is established; (2) the ease with which any depth of anesthesia can be secured; (3) the prevention, to a very large extent, of postanesthetic vomiting, pulmonary complications and abdominal distention.

Its chief dangers are (1) anoxemia due to a failure to give sufficient oxygen or to an obstructed air-way; (2) impediments to the respiration, which in a long anesthesia may exhaust the patient; (3) with cardiac cases excitement during the period of induction.

[DISCUSSION ON THE PAPER OF DR. GATCH APPEARS ON PAGE 1611 OF THIS ISSUE.]

ANESTHESIA, WITH ESPECIAL REFERENCE TO NITROUS OXID AND ITS SEQUENCES

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It is desirable to call attention to two points of considerable importance in relation to anesthesia in general. The first of these is the need of all general anesthetics being administered, as far as possible, by or under the supervision of trained anesthetists. There can be no reasonable doubt that a very large proportion of the mortality from postoperative conditions, as well as from the anesthetic *per se*, is due to the unskilled administration of these powerful drugs. In its report, the Anesthesia Commission of the American Medical Association calls particular attention to this in the following words:

> From the statements set forth you will see something of the breadth and of the intricacy of the present-day problem of anesthesia. It is a striking fact that all the newer methods demand expertness, experience, and special apparatus.

The surgeon, moreover, should be relieved from all anxiety concerning and responsibility for the anesthetic in order that he may devote his undivided attention to the work in hand.

The second point is the necessity of selecting the anesthetic or combination or sequence of anesthetics suitable for the special condition to be met. On this point Hewitt says:

> Putting aside for the present certain exceptional circumstances . . . it may be said that the practice of employing one anesthetic for all cases must now be regarded as belonging to a bygone time. To insure success in inducing and maintaining general anesthesia we must vary our anesthetic and our methods of using it, according to the exigencies of the case with which we have to deal.

The anesthetist should make a careful study of the situation, not only with regard to the patient's temperament and physical condition but also in relation to the nature of the operation. This is particularly true of procedures on the head and throat, in which cases it is incumbent on the anesthetist to so plan his work as to offer the minimum of interference to the surgeon. After a due consideration of all factors, he should choose that anesthetic and method of administering it which best fulfils the indications. He should, however, at all times be prepared to abandon his prearranged scheme and adopt another should the exigencies of the case so require. Occasionally, a case will arise that will tax to the utmost the administrator's skill, ingenuity and armamentarium. As an example, I quote the following notes on a case observed while anesthetist to the Eye and Ear and South Side Hospitals, Pittsburgh, Pa.:

> *Patient.*—Miss B., aged 22, suffering from some obscure stomach condition, characterized for the last ten days by constant vomiting after eating. Medium build; moderately anemic. Pulse 84, fair volume and tension. Chest negative, except for slight weakness of cardiac first sound.
>
> *Operation.*—Exploratory laparotomy. The attending surgeon stated that on a recent occasion it was found impossible to produce complete anesthesia with the morphin-ether sequence (open method) and that the operation had to be abandoned after incision to the peritoneum, owing to signs of circulatory shock. The pulse ran high for ten days subsequently.
>
> *Anesthesia.*—This was started with pure nitrous oxid, oxygen 2 per cent. being added after a few breaths and gradually increased to 6 per cent. Anesthesia was complete in about fifty seconds. Ether was now cautiously admitted. Apnea at once occurred, followed by profuse secretion of mucus, retching and slight vomiting; pulse more rapid, abdomen rigid. On stopping ether and increasing oxygen for a moment, former quiet anesthesia was restored. Apnea occurred at each attempt to add ether. Atropin gr. 1/100 was given to control mucus and as a respiratory stimulant. Owing to insufficient nitrous oxid to continue to the end of the operation, the patient was allowed to come out slightly and chloroform was administered by the open method for a few minutes to moderately profound anesthesia. Ether was resumed with 4 per cent. oxygen and a few breaths of nitrous oxid given from time to time when respiration lagged. Anesthesia continued uneventfully for two hours, extensive pelvic work being done through a second incision. Pulse varied from 100 to 120, being 114 at the end. There was prompt recovery without postoperative vomiting.

NITROUS OXID

While ether, either alone or as the terminal member of some sequence, will be the routine anesthetic, it is desirable to consider the properties of nitrous oxid.

MORTALITY RATES

The combined statistics of Julliard of Geneva and Ormsby of Dublin, covering 407,553 ether administrations, show a mortality of one in 16,302. For chloroform it is one in 3,162. Ethyl chlorid statistics are very scarce, but McCardie believes that the death-rate is about one in 3,000. Hewitt, in an extensive review, found only seventeen deaths directly traceable to nitrous oxid, recorded from 1860 to 1900. No deaths have been reported from nitrous oxid and oxygen. Ream, of Chicago, reports 30,000 administrations without a single accident; Teter, 12,000, 1,000 of these being for major operations lasting from one-half to three hours.

Nitrous oxid is therefore by far the safest general anesthetic known.

PHYSIOLOGIC ACTION

Nitrous oxid has a slightly sweet taste and its inhalation is accompanied by no unpleasant sensations. It produces anesthesia by a direct action on the cerebral cortex (Hare), though, when given pure, the anoxemia is probably a contributory factor. Complete anesthesia occurs in from fifty to sixty seconds and lasts for from thirty to fifty seconds. With oxygen the anesthesia can be prolonged indefinitely. Claude Lyons administered nitrous oxid with 15 per cent. oxygen to a dog for three consecutive days. Recovery occurred in fifteen minutes and there were no appreciable after-effects. Clinically, recovery occurs almost as soon as the mask is removed.

The anesthesia is much lighter than that of chloroform or ether and the patients are usually not so tranquil or completely relaxed. In favorable subjects, with proper percentages of oxygen, normal sleep is closely simulated. It is rarely followed by nausea or vomiting.

Careful studies by Kemp show that there is no direct effect on the heart and vasomotor systems, but here also a rise of arterial pressure is caused by the slight intercurrent asphyxia.

As the result of recent work concerning its effect on the blood, Hamburger and Ewing conclude that nitrous oxid produces no permanent or surgically significant changes, while ether and chloroform both produce slight anemia. Chloroform causes, in addition, hemolysis.

Respiration is primarily stimulated, but unless air or oxygen be admitted, it is secondarily depressed and finally ceases from muscular spasm. These phenomena are purely asphyxial and are avoided by suitable percentages of air or oxygen. Slight cyanosis is commonly an accompaniment of its administration, but is to be disregarded.

No changes in any of the body structures have been demonstrated. It has been thought that the use of this drug produces temporary glycosuria, but recent studies render this extremely doubtful (Hare).

INDICATIONS

It should be employed in all cases in which chloroform and ether are contra-indicated. Bevan urges its employment on account of its greater safety, absence of unpleasant symptoms, the little or no resulting nausea, and its rapidity of action. He asserts that it is the anesthetic of choice for the reduction of fractures and dislocations; for the opening of felons; for breaking up adhesions in joints; for draining empyemas and lung abscesses; for exploratory laparotomies and gall-bladder work; for nephrotomy, nephrectomy and nephrolithotomy; for bladder work, such as suprapubic lithotomy and prostatectomy; for draining appendiceal abscesses; for colostomy, gastrostomy and enterostomy; for the repair of typhoid perforations and for gastric and duodenal ulcers; in hernia operations, especially for the relief of strangulated hernia; for varicocele and open operations for hydrocele; in castrations; in amputations except at the largest joints; and in removing such growths as fatty tumors.

CONTRA-INDICATIONS

On account of its asphyxial tendencies with consequent venous congestion, increased blood-pressure, and muscular spasm, pure nitrous oxid should not be employed: in cases with narrowed or obstructed air-passages, as in association with hypertrophied tonsils, goiter, etc.; in cases with extremely bad hearts from either valvular or myocardial disease; in very young children; or in advanced arteriosclerotics.

These contra-indications may all be met by the administration of suitable percentages of oxygen.

ADVANTAGES

1. Safety at time of administration and later in absence of respiratory, circulatory, or nephritic complications or acid intoxication.

2. Rapidity.

3. Comfort of patient both in induction and absence of postanesthetic vomiting.

DISADVANTAGES

1. Narrow zone of anesthesia with consequent uncertainty of muscular relaxation and freedom from reflex movements.

2. Necessity of skill in administration. (This cannot be considered a valid objection.)

3. Cost of apparatus and of gases (from $4 to $6 per hour for the latter).

ADMINISTRATION

This is conducted by means of some form of special apparatus, the exact technic depending on the one employed. Satisfactory ones have been devised by Hewitt, Gwathmey, Cunningham, Teter, etc., the principle of all of them being the same. I employ Teter's.

Air is less applicable than oxygen for employment with nitrous oxid, on account of the large percentage of inert nitrogen which it contains. The administration is usually conducted with pure nitrous oxid for the first thirty or forty seconds, oxygen being then admitted and gradually increased. Generally speaking, from 4 to 6 per cent. of oxygen is applicable for men and from 6 to 8 per cent. for women and children, though the variations may be within wide limits, the indications being to avoid cyanosis and jactitation on the one hand and restlessness and talking on the other.

SEQUENCES

For routine use, I employ the nitrous oxid and oxygen-ether sequence. The advantages are as follows:

1. Greater safety than ether alone on account of lessened amount of ether inhaled and elimination of stage of excitement, in which many of the reported fatalities have occurred.

2. Saving in time, the patient being unconscious in forty or fifty seconds, and usually in third ether stage in three or four minutes.

3. Much pleasanter for patient in induction and in lessened postanesthetic vomiting. The latter is probably due to lessened swallowing of ether-laden mucus during induction.

4. With the Teter and Cunningham apparatus there is, in addition, less liability to ether bronchitis and

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pneumonia and surgical shock on account of the inhalation of warmed and thoroughly mixed ether vapor; and lessened consumption of ether, owing to the inhalations only passing through it.

The nitrous oxid and oxygen-ether-chloroform sequence may be employed to eliminate the dangerous induction period of chloroform anesthesia, when it is desirable to employ that anesthetic.

SURGICAL PATHOLOGY OF THE PROSTATE

REVIEW OF 468 CASES *

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We have recently reexamined the specimens and reviewed the data from all cases of operations on the prostate in this clinic from Oct. 28, 1904, to June 1, 1911. The series, comprising as it does 468 cases, is large enough to warrant placing the observations on record for comparison with the conclusions of previous observers.

Since the publication of the studies of Young, Geraghty and Stevens in 1906, the only comprehensive memoir which has appeared is that of von Frisch, last year. Therefore, we have discussed elsewhere the subject of the prostate, some what at length, deeming it advisable to review therein the essential points in the anatomy and the physiology as well as the pathology of the gland. In thus adding to our own observations a somewhat full review of the data and discussions of others concerning the normal and the pathologic conditions of the prostate, we have hoped not alone to stimulate interest in this organ, but also to place in convenient form the more important facts and theories concerning it, as a basis for future studies. Herein we shall confine ourselves to a somewhat brief recital of the main points in our paper, referring the reader elsewhere for the more detailed discussion of them.

ANATOMY

During the third month of fetal life the mesoblastic tissue surrounding the lower ends of the Müllerian and Wolffian ducts becomes differentiated in association with a thickening of the wall of the primitive urethra. Simultaneous with this the epithelium of the sinus urogenitalis throws off three groups of buds (Pallin) on each side. These buds consist initially of solid cordons of epithelial tissue which penetrate into the annular mass of mesoblastic tissue surrounding them. The glands do not acquire a lumen until after birth.

Shape.—The prostate is, geometrically, an oblate conoid, flattened dorsoventrally, with its base upward and its apex resting on the triangular ligament. The transverse diameter is usually 1/5 to 1/4 more than the base-to-apex diameter of the gland.

Weight.—For comparative purposes, all adult prostates weighing under 16 gm. may be considered abnormally small, all weighing from 16 to 24 gm. normal in size, and all weighing 24 gm. or more as abnormally increased in size.

Subdivisions.—From the posterior aspects the prostate is a bilobular bilaterally symmetrical organ. In its posterior border is a notch, from which a palpable groove extends to the apex, marking the course of the urethra. The slightly convex lateral lobes lie to the right and left of this groove.

In our unabridged article we have discussed rather in detail and presented the illustrations of Tandler and Zuckerkandl's recent contribution on the important question of prostatic hypertrophy. In an especially adapted and extensive series of cases these investigators have demonstrated that hypertrophy of this gland always begins in the *middle lobe*, that total hypertrophy never exists, since atrophy is also present, and that the *surgical capsule* is composed of prostatic tissue. Consequently, prostatectomy is an *intraprostatic* procedure. Based on their observations, which showed that the hypertrophy always involved the portion of the prostate toward the bladder, Tandler and Zuckerkandl hold that operation through the bladder-route is the method of choice. A description of the technic from the anatomist's standpoint is also given.

The verumontanum, or colliculus seminalis, is a long elevation, about 3 mm. high, composed mostly of cavernous tissue and situated near the middle of the posterior wall of the pars prostatica urethræ. It declines at both ends, and on its anterior reclivity is a fine slit-like opening, the exit of the uterus masculinus.

The uterus masculinus is a pear-shaped, longitudinal pouch, extending upward and backward to the base of the prostate, and ending between the ejaculatory ducts. Normally it is 10 to 12 mm. in length, lined with mucous membrane and surrounded by a circular layer of muscle.

The ejaculatory ducts, which transmit the secretion of the seminal vesicles, pass obliquely through the prostate from above, opening into the pars prostatica urethræ dividing it into a proximal and distal portion.

Relations.—From a pathologic standpoint the more important relations of the prostate are the following: (a) the base is in intimate contact with the floor of the bladder; (b) the posterior surface is separated from the rectum by only sparse tense, cellular tissue, poor in fat; (c) the body of the gland embraces a considerable portion of the urethra (pars prostatica urethræ); (d) it communicates with the seminal vesicles and the ejaculatory ducts; (e) it likewise communicates through the vas deferens with the epididymis and the testicles.

Structure.—The prostate possesses a fine fibromuscular capsule of its own which is firmly adherent. It completely invests the gland, and sends a median septum inward, which surrounds the urethra and gives off a number of thinner partitions which divide the parenchyma of the gland into about forty lobules.

In addition, the organ is fixed in its position by fibrous tissue which has been designated by A. Retzius as the "ligamentum pelvio-prostaticum capsulare." This possesses partly the form of an envelope and partly the structure of band-like strips spreading into the enveloping portion and connecting the prostate with the pubis (the ligamentum puboprostaticum).

The visceral layer of the pelvic fascia, first described by Desnonvillers, is lifted up from the pelvic fascia laterally and posteriorly, appears as an application—Waldeyer—of this fascia, on the prostate. From this it passes over the bladder, enclosing the upper surfaces of the plexus pudendalis, the plexus vesicoprostatici, the seminal vesicles, and the ampulla of the ductus deferentes. Between the rectum and the prostate the sapsule is strongest.

The muscular element of the prostate is made up of unusually fine, unstriated fibers. The second sphincter muscle (sphincter vesicæ [Henle], sphincter prostaticus

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[Kohlrausch]) is formed of striated as well as smooth muscle-fibers. Striped muscle-fibers also pass between the two sphincters on the anterior surface of the prostate. In the interior of the gland the muscular element is a dense fibromuscular mass surrounding the urethra. Through this mass pass the prostatic ducts. Spreading out from it in all directions are muscular bands consisting of transverse and longitudinal fibers. While these usually follow the connective tissue framework, in many places they form by themselves the interalveolar septa without admixture with any discernible fibrous tissue. Here and there they form circular or looped structures which embrace the gland lobules. Frisch holds that it is the smooth muscle of the prostate proper which forms the sphincter vesicæ internus.

The parenchyma of the prostate consists of from fifteen to thirty-two distinct glandular systems, each opening by an independent excretory duct into the urethra. Some anatomists describe these gland units as terminal and others as an alveolar type. The terminal alveoli are found scattered throughout the gland, so that a section at any level shows both alveoli and ducts.

We have never seen a tunica propria about any of the alveoli, which agrees with the observations of other recent workers. Instead, the epithelium rests directly on the smooth muscle or fibrous connective tissue.

While in the alveoli of the adult prostate a double layer of epithelium is frequently encountered, it is an open question whether such a formation is normal or not. Langerhans says: "In all alveoli a double layer of cylindrical epithelium is present."

The cylindrical epithelium lines the glands throughout except near the orifices of the ducts where transitional epithelium similar to that of the urethra is present.

Islands of lymphoid tissue are not infrequently found in the prostate. Weski, who has carefully studied these, notes their analogy to those found by Waldeyer in the dog's prostate. He mentions the possibility that the structures may be pathologic, but believes, on account of the entire absence of other evidences of inflammation in the same glands, and on account of the known presence of similar lymph follicles in other glands, that they may be considered physiologic.

The arteries arise principally from the inferior vesical artery. A few small branches also arise from the middle hemorrhoidal and internal pudendic arteries. They enter the periphery at numerous points, penetrate the gland and divide, forming a close capillary meshwork within the alveolar walls.

The veins form a rich plexus within the gland tissue and around the ducts. They emerge from the organ laterally and pass in part into the rich plexus within the capsule, and in part beneath the mucous membrane in the region of the orificium internum and the colliculus seminalis. Bordering on the anterior surface of the prostate, behind the ligamentum arcuatum pubis and under the edge of the symphysis pubis is the plexus pubicus impar, which receives not only the blood from the prostate, but also from the deep dorsal veins of the penis, communicates with trunks from the bladder, seminal vesicles and rectum and is continued as the prostatovesical plexus to the internal iliac veins.

The lymphatics form a wide-meshed network on the surface of the gland. Within the organ they are richest at the base and most sparse at the apex. Compared with the blood-vessels their course is surprisingly tortuous. The lymphatic plexuses on each side form two trunks, a superior and a lateral. The superior pass to the obturator lymph-nodes of the pelvis and the lateral to the internal iliac lymph-nodes (Sappey). The endothelial cells of the lymphatics are characterized by a very finely granular protoplasm.

The nerves of the prostate take their origin from the inferior hypogastric plexus of the sympathetic. The organ is richly supplied with nerves and contains, chiefly on its periphery, ganglion nodes, numerous isolated ganglion cells and a great number of variously constructed end-organs. As a delicate plexus they pass from the seminal vesicles. In this plexus are present fibers from the anterior roots of the third and fourth sacral nerves.

The nerve end-organs on the outer surface of the prostate have been known for a long time. In the mucous membrane of the pars prostatica, von Planner has found numerous bulbous nerve-endings which are situated in the more superficial layer of the membrane and which are sometimes plainly visible as elevations. The recent elaborate and painstaking studies of Timofeew have shown that the prostate contains a most complicated system of nerve-fibers and nerve-endings.

PHYSIOLOGY

In order to appreciate the physiology of the prostate three points must be considered: first, its function as a secreting gland; second, its muscular apparatus, particularly the sphincter formation; and third, its extraordinary wealth in nerve-fibers, ganglion cells and nerve end-organs.

As a secreting gland the prostate undoubtedly belongs to the sexual organs. The secretion of the prostate is a very essential factor of the spermatic fluid. Up to the time of puberty the gland undergoes a rapid growth and reaches its complete development only after that time. After the loss of the testicles in childhood the gland is arrested in its development; after castration of the adult it becomes atrophied.

Casper's work with dogs of the same litter showed that double-sided castration resulted in all cases in a marked diminution of the prostate and most decided changes in its glandular structure. Neusser notes that the persistence of the prostatic secretion, in many cases for a long time after castration, and the actual power of coition in the eunuch, which is lost only after years, indicate that an independent function must be attributable to the prostatic gland or to the innervating apparatus. Fürbringer has shown that the so-called "Böttcher" or "spermatic crystals" arise from the prostate. He succeeded in demonstrating the crystals by evaporation of the prostatic secretion secured from fifty-six autopsies (90 per cent.).

Besides the Böttcher crystals one finds constantly in the prostatic secretion large, colorless, moderately refractive, round granules. These produce the milky cloudiness and, judging by their reactions, consist chiefly of lecithin. The filtrate contains albumin but no mucin.

Spermatic crystals are not present in prostatic secretion secured by rectal palpation of the living. Ammonium phosphate, however, added to such expressed secretion causes the formation of the crystals. Fürbringer therefore concludes:

> For the formation of the Böttcher crystals observed in the ejaculated spermatic fluid, the secretion of the prostate affords the basic portion, whereas the phosphoric acid necessary thereto is contributed by the other components of the spermatic fluid.

In the dead body the post-mortem degeneration of the epithelium probably furnishes the necessary phosphoric acid. The characteristic spermatic odor is probably an

attribute of combinations of the Schreiner base in dissolved form. Fürbringer demonstrated that the secretion of the prostate causes the normally motionless spermatozoa, as they are stored in the seminal tract, to become motile.

The descriptions found in the literature of the appearance of the prostatic secretion as clear, glossy, thready, etc., are incorrect, as Fürbringer explained. The secretion is a thin fluid of milky cloudiness, slightly acid or neutral in reaction and of a highly characteristic odor.

Percy has shown that spermatozoa quickly die in contact with uterine mucosa without the admixture of prostatic secretion, while in the presence of this secretion they remain alive three to eight days. Steinach has pointed out that simultaneous extirpation of the seminal vesicles and the prostate, while not interfering with the power of copulation, nullifies the capacity of begetting.

That the prostate possesses an internal secretion which acts on the external secretion of the testicles, vas deferens and the seminal vesicles, is strongly suggested by the work of Serralach and Parès. They found that after the removal of the prostate from dogs the secretion of all the sexual glands ceased, spermatozoa were no longer to be found and the testicles became atrophied. When injections of glycerin extract of the prostate were made after the prostatectomy, atrophy of the testicles did not occur, ejection remained, and spermatozoa were demonstrable in the ejection.

The arrangement of the smooth muscles of the prostate, longitudinally about the glandular tubules and circularly about the alveoli, is such that their contraction empties the gland of its accumulated secretion. According to Lusena, the quantitative relation of the muscles and glands of the prostate varies according to the age of the individual. In middle life the muscles and glands are present in the same amount. In old age the muscles are developed at the expense of the glands. Between 25 and 30 years of age the genital activity of the prostate reaches its highest point. Between 45 and 50 years the fibromuscular layer becomes relatively more extensive, a sign of beginning age.

The mechanism of the bladder closure and the emptying of the urine may be properly ascribed to the sphincters of the prostate, Rehfisch and Posner to the contrary notwithstanding. The closure of the bladder is cared for by the smooth sphincter internus muscle which remains in a state of tonus. This tonus must relax when there is need to pass urine and then the effect of the detrusor muscle comes into action.

Frisch calls special attention to the fact that while the unstriated muscles of the internal sphincter may be the usual mechanism for closing the bladder, yet the auxiliary muscles of the perineum can assist in producing the same effect by an energetic voluntary contraction, a fact which is important in prognosis after prostatectomy.

It is probable also that the numerous ganglia situated in the prostate and bladder hold an important function in the closure of the latter and in urinary discharge, and that these must be looked on as centers.

In regard to the nerves of the prostate all the motor and vasomotor fibers in the nervi erigentes and nervi hypogastrici, which arise from the inferior mesenteric ganglion, reach the prostate. Stimulation of the erigentes has a negative result, or, in the beginning, the excretion of a considerable amount of secretion, which is then followed by a cessation. On the contrary, stimulation of the hypogastrici produces a continuous, genuine secretion. If a cannula be introduced into the urethra in connection with a long upright tube, the level of the fluid mounts rapidly upward through stimulation of the nervi erigentes and sinks again downward as soon as the stimulation is suspended. Under similar conditions, if the hypogastrici be irritated, then the entire tube becomes filled and the fluid flows out from above. The erigentes, therefore, only press the secretion out of the gland, which secretion has been produced by the stimulation of the hypogastrici, so that these are the real secretory nerves. Stimulation of the central stump of one of the hypogastrici, with its fellow intact, produces secretion, and does this even when the inferior mesenteric ganglion has been separated from the remaining sympathetic fibers and, consequently, separated also from the central spinal cord.

PATHOLOGY

INFECTIONS OF THE PROSTATE

1. Acute Prostatitis.
   - A. Catarrhal.
   - B. Follicular.
   - C. Parenchymatous.
   - (Segond's classification; also held by Guyon).
2. Chronic Prostatitis.

Etiology.—As idiopathic primary processes they are rare and, excepting as complications of gonorrhea, infrequent.

Causes attributed by various authors are: from without, injuries due to horseback riding, bicycle riding and similar exercises; from within, unsuitable introduction of instruments, too frequent and unclean catheterization, lithotripsy, abortive injections, too severe cauterization of the pars prostatica (especially with the pencil—Guyon), unnecessary duration of the self-retaining catheter, caught stones and foreign bodies, stricture of the urethra.

Disposing causes are: congestions and irritations in the rectum (hemorrhoids, foreign bodies, fissures, fistulas, proctitis and periproctitis), chronic obstipation, dysentery and enteritis, venereal excess, masturbation, coitus reservatus, metastases in pyemia, typhus, measles, small-pox, croupous pneumonia, parotiditis, influenza, tonsillitis, carbuncle, furuncle, phlegmonous angina, gout, syphilis, cystitis, stones in the bladder, prostatic hypertrophy, and infection by way of the blood.

By far the most frequent cause is gonorrhea. Prostatitis can follow not only every acute gonorrhea of the posterior urethra, but also every stage of chronic gonorrhea. The older the latter, the more frequently will the prostate be found diseased. Whereas the infection is usually from the posterior urethra, many admit its possibility from the anterior urethra—perhaps by way of the lymph channels. Opinions as to the frequency with which prostatitis follows gonorrhea vary within wide limits. These differences are explained as probably due to errors and difficulty in diagnosis; those holding high percentages including in their statistics the mild, but more frequent cases; and those quoting low percentages limiting their diagnoses to severe parenchymatous prostatitis alone. The weight of evidence, however, appears to favor the opinion that prostatitis is a frequent complication of gonorrhea.

In our series of 468 cases, seven were tuberculous. Tuberculosis of the prostate is principally a disease of the young adult, though our meager list of cases does not show it.

With regard to its etiology it is highly improbable that heredity is a predisposing cause, though it has been suggested by a number of observers. It is also unlikely that

acute local hyperemia, or acute inflammations, as in sexual excesses, acute cystitis, etc., predispose to tuberculosis. Chronic inflammations, on the other hand, may do so. There is no basis for the supposition that direct infection may come from without. Infection takes place most frequently through the blood-stream. The well-known tendency of the prostate to exhibit evidences of infection in typhoid fever, glanders, etc., is analogous to the condition which probably obtains in tuberculosis, namely, that the organ is one in which even small amounts of bacilli circulated in the blood are caught and stored up. That the prostate may be the only organ of the body secondarily affected by tuberculosis is shown by the number of cases reported as permanently cured after prostatectomy.

Secondary disease of the prostate may be developed from the epididymis or, more rarely, from the kidney or the seminal vesicles. Baumgarten and Krämer have shown that the extension of tuberculosis in the urogenital tract follows the stream of the secretions and rarely proceeds against the stream. It must be noted, however, that several portions of the urogenital system may be affected simultaneously and independently of each other through the blood-stream.

The tuberculous prostate is frequently more involved in one lateral lobe than in the other. The periphery of these lobes is the most frequent site of tuberculosis. In all of our cases the disease was confined to the lateral lobes and not in the neighborhood of the urethra.

Microscopically, the tubercle bacilli are usually demonstrable between the epithelial cells and in the borders of recent tubercles. Secondary infections are occasionally present, producing suppurative softening and abscess instead of ordinary caseation. Staphylococci and, more frequently, *B. coli communis* are usually the accessory pathogenic organisms. Halle and Motz hold that surgical interference should not be attempted in cases with acute secondary infection.

In case of infection from the intestine the micro-organisms pass directly from the intestine through the inflamed wall into the prostate. Infection by way of the blood is to be assumed when a direct transmission from the urethra, from the intestine, and by way of the lymph-channels can be excluded. This holds for primary suppurative prostatitis as well as for the chronic form.

Acute Prostatitis.—The ordinary picture in text-books is misleading. These describe the symptoms of the severe parenchymatous type, making that the typical picture of acute prostatitis, whereas both the lighter forms, namely the catarrhal and the follicular, are much more frequent.

A. Catarrhal Prostatitis: Acute gonorrheal catarrah of the prostatic gland is undoubtedly the most frequent form of acute prostatitis, and it is very likely that acute posterior urethritis cannot run its course without involving the gland. The gonococci pass quickly into the excretory ducts and produce a deep-seated process, involving prostatic glandules, utriculus, ejaculatory ducts, and even the seminal vesicles.

B. Follicular Prostatitis: This is developed as a rule from acute gonorrheal catarrh. It occurs frequently as a sequence of posterior urethritis, but can even be associated with chronic prostatitis. There is stagnation of the secretion, due to obstruction of the openings, and the process leads to the formation of abscesses. Jadassohn designates these as "pseudo-abscesses," since the suppuration exists in preformed cavities. The cut surface in the lateral lobe presents little points of thick pus.

C. Parenchymatous Prostatitis: This involves the entire gland. The lighter forms are designated as hyperemia or congestion of the prostate. The organ is doubly, even quadruply, enlarged, feels hard and tense. The blood-vessels on the surface are redundantly filled with blood. The cut surface of the prostate is more markedly reddened than in the healthy organ. On pressure there is expressed a reddish and somewhat cloudy fluid—a mixture of lymph and serum—arising from blood out of the filled capillaries, also from prostatic fluid and a small amount of pus, since one sees merely a few pus cells under the microscope.

Chronic Prostatitis.—Etiology: Guyon and Fürbringer consider chronic prostatitis a rare condition, whereas Finger, Frisch, Posner and several others hold that it is common.

Gonorrhea is the most frequent cause. Other causes mentioned are onania and other sexual excesses, stricture, cystitis—chiefly where ammoniacal urine is present—vesical and prostatic stones, catheterization and other traumata, and hypertrophy. Stern speaks of prostatic affections in diabetics and bases his opinion on the fact that, when such patients are placed on a diabetic diet the symptoms subside, to recur when the diet is again withheld.

In the case of gonorrheal prostatitis the striking changes take place almost always at the caput gallinaginis. This is either symmetrically or asymmetrically enlarged, its mucous membrane loosened and possesses here and there papillary excrescences, or is thickened like a cicatrix.

A point worthy of note is the fact that a genuine new formation of glandular tubules is to be observed on the glands in many cases, a point which, up to the present time, has been only superficially mentioned by Albarran. This glandular new formation is at times of such a kind that an adenomatous-like structure arises. However, there is always seen in the immediate vicinity inflammatory foci, often in very luxuriant growth and in direct communication with the real inflammatory center, so that there is no doubt of the causal relationship between the inflammation and the glandular development.

Hypertrophy.—Statistical Data: In our series of 468 prostatectomies, 387 cases (83 per cent.) were hypertrophy, the remainder being cases of tuberculosis or neoplasms. The ages of the patients whose prostates showed hypertrophy only were as follows by decades:

50 to 60 years of age	65	(17 per cent.)
60 to 70 years of age	194	(50 per cent.)
70 to 80 years of age	116	(30 per cent.)
80 to 90 years of age	12	(3 per cent.)

It will be seen from the above figures that all of the patients were above 50 years of age, and that 83 per cent. were above 60. Thus all the patients may fairly be assumed to have passed the most active period of sexual life. Of these patients, 78 per cent. were married, 18 per cent. were widowers and 4 per cent. were single.

Of our 387 cases, in only seventy was the parenchyma increased without apparent increase of the stroma. In but seventeen the stroma was increased without any apparent increase of the parenchyma, while in 300 cases there was increase of both stroma and parenchyma. In 205 of the cases the increase in the muscular element was sufficiently prominent to be noted. While, of course, these observations do not cover microscopically every portion of the gland removed, they have been made on sections selected in each case from a number of different areas.

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In 266 cases there was present a round-cell infiltration either diffuse or somewhat circumscribed. In these cases it was usually impossible to say whether or not the round-cell infiltration was lymphoid or inflammatory tissue.

Etiology: With regard to the etiology of prostatic hypertrophy no hypothesis has yet been advanced adequately harmonizing the facts. Elsewhere we have discussed the various causes that have been cited by investigators, but such detail must be omitted here.

Whatever may be the initial stimulant or the broad biologic factor which lies at the base of the prostatic hypertrophy, we are inclined to think that the following steps represent the usual development of the disease.

1. There is an initial hyperplasia of the parenchyma, marked microscopically by high cylindrical epithelium with swollen nuclei, which resemble in all respects actively secreting epithelium in other well-studied glands. That these epithelial cells are actively secreting is further shown by the presence in early stages of relatively large amounts of secretion, which is distinguished grossly from that of the normal prostate. This parenchymatous hyperplasia is frequently so great as to result in the development of marked infoldings of, and papilliferous proliferation from the alveolar walls, sometimes carried to the extent of completely bridging the alveoli.

2. Apparently the second stage of hyperplastic development, though not a definitely limited one, is that of retention within the alveoli and tubules of the secretion. This retention may be due to beginning exfoliation of the epithelium, and it may be due in part to blocking of the excretory ducts of the individual gland-units by a beginning concomitant muscular hyperplasia.

3. The third stage is parenchymatous degeneration, which in the hypertrophied prostate is marked by atrophy or exfoliation of the epithelium. The first of these processes is shown by the flattening of the epithelial cells, the reduction in size of the nuclei, and the diffuse staining of their protoplasm. The second process, exfoliation, may and frequently does occur in epithelium which is still in the high columnar, secreting phase. Atrophic epithelium is usually associated with swollen cystic acini. Exfoliations occur in any acini, but are densest and best-preserved in large acini. Exfoliation may be so extensive as to present a picture of completely denuded alveoli or cyst-walls. The stripping of the epithelium from the papilliferous projections and alveolar bridges leaves these as slender, fibrous projecting or bridging structures.

4. Early in the development of parenchymatous hyperplasia there begins a muscular overgrowth which represents, apparently, an attempt on the part of Nature to expel from the gland the retained secretion. Our cases, however, do not show a large percentage in which the muscular hyperplasia greatly outweighs the element of fibrous connective-tissue overgrowth.

5. The overgrowth of fibrous connective tissue in the hypertrophied prostates in our cases is the most constant factor, though it must be borne in mind that many cases coming to operation may fairly be assumed to have long passed the stage of active parenchymatous and muscular hyperplasia. The fibrous connective tissue may well have its origin not alone in acting as a supporting frame-work for the increased glandular elements, but also in metaplasia of the smooth muscle-elements. In the normal prostate the muscular and fibrous connective tissue are so blended that it is readily conceivable that with overgrowth and overfunction the unstriated muscle fiber may, by steps of gradual transition, change into fibrous connective tissue as a terminal stage in the life history of the muscle cell.

Tandler and Zuckerkandl state that the usual classification of the lobes from external form alone is incorrect. They hold that the lobes should be classified according to the zones of glandular distribution, which is supported by the embryology of the prostate. Thus considered the organ is divided into anterior lobe, middle lobe and two lateral lobes. The ducts of the anterior lobe open on the anterior urethral wall opposite the veru montanum, those of the middle lobe on the posterior wall of the urethra, proximal to the veru montanum, and the ducts of the lateral lobes are found on both sides of that elevation. The middle lobe lies between the urethra and the ejaculatory ducts, and, as recent anatomic examinations have demonstrated, is the starting point of prostatic hypertrophy.

Neoplasms. — The question that has seemed to us uppermost in the minds of physicians inquiring into the results of research on the prostate has been: "What is the percentage of malignancy?" Viewed in the light of a comparison between the statistics of recent investigators and those of the older writers, that question is decidedly pertinent.

The extremely limited recognition of malignancy in the prostate up to the time of Thompson's contribution in 1854, and the gradual increase in its recognition from that date to the present, are a stimulus to keener observation and study of the prostate with regard to neoplasms. Tanchou's statistics, compiled by Thompson, showed but five cases of prostatic cancer among 8,289 patients, who had died from cancerous disease. Among 548 cases of cancer in the Billroth clinic, von Winiwarter found only one case of prostatic cancer.

These figures sufficiently emphasize the extreme rarity of the recognition, in earlier days, of malignancy in the prostatic gland.

In 1854 Thompson contributed the first available statistics on the subject, having cited eighteen cases from the English and the French literatures. In 1866 Wyss reported twenty-eight cases, including those of Thompson. Since that time other reports have been made as follows: Socin (1875), fifty cases; Kapuste (1855), 114 cases; Engelbach (1888), 114 cases; Wolff (1899), 110 cases. Young has reported sixty-eight carcinomata among 250 enlarged prostates, which had been extirpated. Belfield has made the observation that 10 per cent. of all hypertrophies are carcinomata. In our series of 468 cases there were seventy-three (15.5 per cent.) carcinomata. Sarcoma of the prostate is relatively rare. Kaufmann cited twenty-four cases, and eleven others have since been added to that number by various investigators. Although the statistics of some writers have shown a higher percentage than the above, a more exact examination of their material has not confirmed their figures, and indicate that Kaufmann's statistics are to be considered the basis for judgment as to the frequency of sarcoma in this gland.

In this brief historical review may be noted the steady advancement during the past half-century in our knowledge of malignant growths in the prostate. Although the statistics of recent investigators vary within somewhat wide limits as to frequency of its occurrence, yet it should be a generally recognized fact that carcinoma of the prostate is a comparatively frequent disease, and that sarcoma of the prostate, though relatively infrequent, does occur.

These neoplasms may be present in the gland both primarily and secondarily. Cancerous and sarcomatous nodules—the latter by far the more infrequent form—have been observed in cases in which the primary foci were situated in various organs. The primary tumor has been found most frequently in the rectum, less often in the urinary bladder, the seminal vesicles, on the penis, in the stomach (Engelbach), the lungs (Fenwick), and the dura mater. Kaufmann held genuine metastatic growths of the prostate to be extremely rare.

Malignancy in the prostate is observed from earliest childhood to late old age. Carcinoma is more prevalent in the latter decades of life, and sarcoma in the beginning years.

Of our patients

1 was between 40 and 50 years of age.
9 (12 per cent.) were between 50 and 60 years of age.
29 (40 per cent.) were between 60 and 70 years of age.
30 (41 per cent.) were between 70 and 80 years of age.

The middle period is relatively free from malignancy in this organ. The youngest patients observed were children 6, 8 and 9 months old (Rose, Socin, Bree). Since, undoubtedly, the beginning of development is to be dated much earlier, Klebs held as not unlikely that the process may at time be referred even to the intrauterine period of life.

Pathologic Anatomy: Of the seventy-three cases, fifty-one (69 per cent.) showed marked glandular hypertrophy, as was evidenced microscopically by papilliferous projections into the acini. In thirty cases (41 per cent.) there was definite muscular atrophy, and in sixty-one cases (83 per cent.) the fibrous stroma was increased. In ten cases (13 per cent.) there was no evidence of associated hypertrophy in the sections examined from the glands, leaving 87 per cent. in which there was evidence of hyperplasia. Whether in these cases the hypertrophy was primary and the carcinoma implanted thereon, it was impossible to determine, though in many microscopic sections the apparent transition by almost imperceptible variations from simple hyperplasia to undoubted carcinoma was observed.

Usually one can be moderately certain of the cancerous nature of the tissue on gross inspection alone. When the operator's knife, in making capsular incision, cuts through tense tissue which does not bulge, the edges of which are firm and ridged, suspicion should be at once aroused. It has been our experience that carcinoma in no tissue, with a possible exception of small tumors of the breast, removed at the surgical clinic was more apt to escape diagnosis grossly than that of the prostate, so that it is our inevitable custom to make frozen sections from various areas of the removed gland and report to the surgeon while the operation is in progress.

Etiology: The etiology of carcinoma of the prostate is completely unknown as is that of carcinoma elsewhere. Albarran and Hallé insist on a definite relationship between prostatic hypertrophy and carcinoma. Among eighty-six hypertrophied prostates they found, in twelve, changes in the epithelium, which they thought to be different grades of carcinomatous degeneration. When one considers the difficulty of accurate diagnosis, however, especially in cases of carcinoma of the prostate, all such instances as the above must be regarded with some suspicion, unless all of the tissue of the prostate was removed at the original examination and a careful microscopic investigation made thereof.

While we may consider it fairly well established that isolated epithelium, whether from inherent or external stimuli, exhibits a tendency to proliferate and infiltrate, and while the observations of many workers record series of pictures such as those described by Albarran and Hallé, yet we must be conservative in our interpretation of these apparent transitional stages of hyperplasia into carcinoma. Likewise, we must examine most critically all clinical data, such as the observations of Prédal and others, suggesting the same line of development.

Metastases: Many prostatic carcinomas show a marked tendency to seize on neighboring structures, particularly the floor of the bladder, seminal vesicles and rectum. The lymph-glands in the region of the prostate are the first to become infiltrated with cancer. After that, the retroperineal and inguinal glands become involved. Metastases to distant organs are common, and should always be as carefully as possible excluded in clinical examination before operative procedure. They are frequently present in the lungs, liver, spinal column and long bones. Von Recklinghausen, Sasse, Brown, Kolisko, Frisch and others have emphasized the importance of seeking for small carcinomata in the prostate, breast or thyroid in cases in which extensive metastases in the bones have been found at autopsy. Von Recklinghausen says:

If, in the female, cancer of the vertebra breaks forth with unspeakable pain, as a rule, one does not err if he assumes the original focus to be in the breast. In such cases the primary focus may reach only to a very small size.

Frisch says:

Perhaps just as frequently may the causative rôle for general carcinoma in man fall to the lot of prostatic cancer as to the lot of the breast-gland cancer in the female. We know how difficult it is to recognize prostatic cancer with the naked eye, how little it destroys the tissue, how very much more it tends to produce induration so that only the typical involvement of regional lymph-glands discovers and facilitates the diagnosis.

As prostatic sarcomata develop they involve the bladder wall and neighboring structures. The neighboring lymph-glands are usually affected, but distant lymph-glands rarely. Metastases to other distant organs — lungs, liver, etc. — are also uncommon, though instances have been reported.

With regard to the histologic type of tumor, the round cell is the most common, and after this the spindle cell. Angio-, lympho-, myxo-, adeno-, enchondro-, leiomyo-, and rhabdomyosarcomatous forms have also been reported.

In concluding this incomplete review of an important subject, we trust, that, at least, our aim to stimulate keener interest in the study of the prostatic gland has been successful. It is a regrettable fact that many otherwise well-informed physicians seem to be almost unaware of the existence of this organ. At least they are prone to ignore its rôle in the production of a train of symptoms which they frequently ascribe to a "weak bladder" or "kidney disease." Often patients die of the sequelæ of prostatic hypertrophy, or directly from prostatic carcinoma, without ever having had a rectal examination. Patients have been operated on for chronic appendicitis when their symptoms were really due to carcinoma of an unexamined prostate. In every case of gonorrhea in the male the possible involvement of the prostate should be remembered and the patient warned, at the time, of the troubles probably in store for him in the future.

A rectal examination should be a routine procedure with all males presenting themselves for diagnosis of obscure abdominal as well as genito-urinary troubles.

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A CASE OF HYPERIDROSIS UNIVERSALIS WITH CONTINUOUS FEVER*

HENRY HERBERT, M.D.
LOS ANGELES

History.—The patient, E. Gr., 22 years of age, clerk, is the only child of his parents, who are living and healthy. As a child he had measles and some lung disease, otherwise he was healthy up to the age of 12, when his present ailment of constant sweating commenced. He lived formerly in the Middle West, came four years ago to Los Angeles, worked three years as a bell-boy in a hotel and has for the last year acted as bank messenger, having sought the occupations of bell-boy and clerk as being most suitable for his condition.

He perspires continually and the perspiration stops apparently only when he is in fresh air or in a draft; during sleep it stops only when he is exposed to a draft and fully uncovered. His perspiration increases indoors, in the theater, in church or by sitting still, and by exposure to the sun; he perspires also during rain or snow; his condition is aggravated after meals, after drinking cold water or warm drinks. His appetite is and always has been good, but he drinks a great deal of water. His bowels are regular; he looks normal and healthy. A peculiarity about his sweating is that the suprascapular and occipital region of both sides remain always dry (anidrosis).

His weight has for the last two years been about 120 pounds; for four years his temperature ranged from 99 to 102 F., and the following data were recorded by me at various times:

	Temp. F.	
Feb. 6, 1909, 2 a. m.	99.4	
" " " 8 a. m.	99.2	
" " " 3 p. m.	100.0	
May 1, 1909	99.6	
June 1, 1909,	101.0	
Sept. 28, 1909	99.2	
February, 1910	99.2	
March, 1910	100.4	Pulse, 96-120
May 26, 1911	99.8	Pulse, 108
June, 1911	99.0	Pulse, 96

He complains of weakness, inertia and nervousness; on deep inspiration he has vertigo; in throwing back his shoulders he feels numbness and formication over the dorsum of the two last fingers of both hands. Occasionally, he sees black spots dancing before his eyes, becomes dizzy, and in the past has had attacks of amaurosis. His knee-reflexes in 1909 were hardly perceptible. They are promptly elicited in 1911.

His blood was examined May 5, 1909, by Dr. Eleanor Seymour of Los Angeles, and revealed the following interesting facts:

Hemoglobin	90	per cent.
Red blood-corpuscles	6,040,000	
White blood-corpuscles	10,280	
Neutrophils	53	per cent.
Lymphocytes	21	per cent.
Eosinophils	14.5	per cent.
Large mononuclears	10	per cent.

Quite different are the findings by Dr. D. C. Ragland, of Los Angeles, June 28, 1911:

Red cells	5,700,000	
White cells	7,600	
Polymorphonuclear leukocytes	48	per cent.
Small lymphocytes	38	per cent.
Large lymphocytes	9	per cent.
Eosinophils	3	per cent.
Mast-cells	1	per cent.

Examination.—The ophthalmic and cutaneous tuberculin tests were negative. The examination of the urine proved to be negative; chest and abdomen apparently normal. On pressure over transverse processes of the sixth or seventh vertebra of both sides, I elicited considerable pain in the patient.

Pressure on the third sympathetic ganglion, or irritation of it causes hyperidrosis; paralysis or destruction of it causes anidrosis. In our case we had hyperidrosis, probably due to pressure, and partial anidrosis, probably due to paralysis of the respective nerves.

Profuse sweating has been caused by irritation of the cervical sympathetic in animals. According to Riehl, hyperidrosis may just as well be explained by the irritation of the vasodilators as by paralysis of the vasoconstrictors.

Friedlander reports observations by others of unilateral hyperidrosis, in diabetes mellitus, in general paralysis, temporary dementia, in mental diseases, in hemiplegia, in tabes, etc.

Many cases of unilateral hyperidrosis have been reported in otherwise healthy persons. In some individuals, hyperidrosis universalis occurs often, but only for a brief period; in others it is habitual and continuous. As a morbid function of the skin it usually lasts many years and is found almost exclusively during middle life. The immediate cause of the hyperidrosis is always located in the capillaries of the integument, especially of the coil glands and papillæ.

These conditions are regulated by the vasomotor (sympathetic secretory) nerves. We may thus understand how a profuse secretion of sweat, either general or local, may appear under the influence of mental excitement, fright, confusion, or local pains, as the result of a stimulus which is either reflex or starts from the central organs. This has also been shown experimentally. On making a section of the cervical sympathetic, Claude Bernard found that the vascular paralysis was associated with profuse perspiration in the paralyzed parts.

In one case of hyperidrosis of the left side of the body, Frankel and Ebstein found stasis of blood-globules in the vessels of the corresponding cervical sympathetic. In one case, which affected the left side of the head, Riehl noted, in addition to the same findings in the vessels, interstitial cellular infiltration of the superior ganglion of the cervical sympathetic.

Disturbances in the sympathetic of the neck are still obscure, and most of the lesions described in literature are spoken of as lesions of the sympathetic of the neck. Such lesions, affecting probably the superior ganglion or the whole length of the sympathetic, must differ in their clinical manifestations from isolated or strictly localized lesions. It seems that in the present case there is no disturbance of the superior or middle ganglion as the respective ocular symptoms are wanting. On the other hand, it has been proved experimentally as well as by autopsy that lesions of the inferior ganglion may produce symptoms as present in that case. In general, we will find lesions of the inferior ganglion produced by exostoses, aneurysmal tumors pressing on ganglion, or by inflammatory conditions in and around the ganglion.

1524 Magnolia Street.

ABSTRACT OF DISCUSSION

DR. JAMES T. FISHER, Los Angeles: I had the pleasure of examining this gentleman in my office a year or year and a half ago. He attracted a great deal of attention and the case was brought before our county medical society. At the time I examined him his physical condition was absolutely negative with the exception of the symptom that you see here—the sweating. His pupillary reaction was normal; his knee-jerks were not normal. In view of the fact of his age, and

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911

various factors which I will not go into, to me it is fairly evident that this man is suffering from an ordinary form of hysteria, and I am not inclined to think that it is other than that. Perhaps you will say that that does not explain all of his symptoms. Even so, I cannot account for this condition except as coming under the general classification of ordinary hysteria.

DR. HAROLD N. MOYER, Chicago: This appears to be a new find, or is at least a very rare symptom-grouping. With such exceptional findings a certain degree of modesty in suggesting a diagnosis is becoming. There are certain salient symptoms which are not explainable under any theory that I know of regarding the association of symptoms: First, the sweating; second, the presence of six million red cells; third, a marked eosinophilia; and fourth, a persistently elevated temperature. These make a symptom-grouping that I have never seen associated. The case presents a new combination of symptoms, and possibly a new disorder.

DR. GEORGE A. MOLEEN, Denver: I have been very much interested in this case, but from the start it appeared to me on a functional basis. Someone has said that nothing could be present in hysteria but what could be produced by suggestion. I would like to ask if suggestion has been used in this case as a means of differential diagnosis. It has come within the experience of men who have used hypnotic suggestion that it is quite easy to produce either localized or general sweating to influence the temperature and produce other changes of equally remarkable natures. However, that would not account for the blood changes which occur in this case. The absence, however, of organic symptoms, or symptoms of tissue change, and the fact that the functional disarrangement which would produce or lead to the sweating can be reproduced by suggestion, lead me to believe that it is on a functional basis.

DR. F. E. MURPHY, Kansas City, Mo.: May I ask when this estimate of eosinophils was made?

DR. HENRY HERBERT: Last year.

DR. F. E. MURPHY: Fourteen per cent. of eosinophils is certainly a symptom that necessitates some consideration. It would be interesting to know the percentage of eosinophils at this time. Possibly a year ago there was an intestinal parasite or something of that sort giving eosinophils. It would be interesting to know at this particular time how much the symptom observed a year ago is evidenced. There is one feature I observed, and that is the condition of this boy's vascular system. Several of us palpated his blood-vessels, and there are certainly marked changes in them. I am disposed to believe that there is something more than functional trouble in this instance.

DR. HENRY HERBERT, Los Angeles, Cal.: The temperature was taken regularly and always by the mouth for a period of from two to five minutes. Suggestion has not been used in this case. In regard to the eosinophils, that suggestion of reexamining the blood of the patient is a very good one. I am at a loss to say what the diagnosis is. One interesting feature leads me to believe that it is a lesion of the third sympathetic ganglia: first, the intense pain on pressure; then, the accepted rule, or accepted experiment or experience, that irritation of the sympathetic ganglia, especially of the third on one side shows a unilateral sweat, whereas the paralysis of that center shows anhidrosis. Now, we have general sweating on both sides, pain on both sides on pressure over the third sympathetic ganglia. At the same time, over that ganglia in that approximate region, or the region which is supplied by the approximate nerves, there is anhidrosis—no sweating at all. That would indicate a general irritation of the sweating center and a paralysis of those nerves supplying that area—the suprascapular region. If there is any process, fibrosis or chronic inflammation, to furnish the ganglia with some pressure, that would account for that anhidrotic area, and at the same time irritation of the entire sympathetic ganglia. The symptom-grouping, as one of the speakers mentioned, with the eosinophils, speaks against the supposition of a functional disorder or hysteria. I think that symptom is based on a permanent disorder, probably a disorder of the nervous system

HOW OUR THERAPEUTICS CAN BE IMPROVED *

BOARDMAN REED, M.D.
LOS ANGELES

Tremendous advances have been made in therapeutics during the past two decades, advances which it is needless to enumerate to educated medical men. But there remains yet room for improvement. There are still failures in treatment, many of which could be avoided by a more perfect mastery of all the conditions which confront those charged with the high duty of endeavoring to heal the sick. This can be attained only by raising the standard of the doctorate to a yet higher plane, so as to assure for every practitioner a better knowledge of all that pertains properly to the science and art of healing and the auxiliary medical sciences, together with clinical experience under instruction. Such a training with industry and patience would assure an accurate diagnosis in every case in which such a diagnosis is practicable, followed by the best possible treatment.

Improvement must result from a more thorough study of (1) man and his organs and functions in both health and disease, including especially diagnosis; (2) a more intimate acquaintance with all the reliable remedies, medicinal, mechanical and psychologic from whatever source, a knowledge which shall recognize the fact that the more active ones seem to be capable of exerting either of two opposite actions according to the dose.

A very large proportion of the failures in treatment, whether made by regulars, sectarians, quacks, counter-prescribers or self-dosers, is due to a wrong diagnosis. No method of treatment is likely to prove helpful when prescribed in the wrong case; very frequently then it does harm. Innumerable patients die because the diagnosis is made too late, the medical attendant not having obtained needed counsel in time. Other failures and often much mischief result from continuing too long and in large dose a remedy which may have done good at first. Sometimes the failure is in consequence of too small a dose having been prescribed. I have seen cases of hyperchlorhydria and ulcer of the stomach or duodenum aggravated by 10- or 15-gr. doses of sodium bicarbonate and yet afterward promptly relieved and finally cured with the help of teaspoonful doses of the same drug well diluted and combined, when necessary, with 30 to 40 gr. of bismuth.

On the other hand, while drop doses of the wine of ipecac will relieve some forms of nausea, and severe vomiting often yields to drop doses of Fowler's solution, *à la* Ringer, and a threatened miscarriage is stopped by the tincture of cimicifuga every hour in the same small dose, as I frequently proved in my general-practice days, any one who would try these medicines in the usual doses in such cases would surely aggravate them.

Evidently, then, it would be a gain to our therapeutics if medical students were plainly taught that tissue-disturbing drugs are capable of producing opposite effects according to the dose. This was demonstrated to my own satisfaction twenty-three years ago by a careful study of the elaborate reports of numerous experiments conducted by eminent pharmacologists in England and Germany especially. My conclusions, though questioned, have never been refuted. They were published first in the *Practitioner* (London), and after-

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

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ward in this country. In a large experience since 1888, they have been amply confirmed. The matter was summed as follows:

1. A relatively small dose always at first stimulates the parts (nerve-centers, nerves, glands, muscles, membranes or other tissues) which the drug specially affects.

2. A sufficiently large dose (pushed far enough) always finally paralyzes the parts which the drug specially affects.

3. A moderate or medium dose may first stimulate and afterward depress, finally paralyzing if repeated often enough.

Lauder Brunton was quoted in the same paper as having stated in his "Pharmacology" that "this opposite action of large and small doses seems to be the basis of truth on which the doctrine of homeopathy was founded," following which he proceeded to criticize the fallacies of Hahnemann.

But after all, the most important point in therapeutics is to have a correct, an exact and also an early diagnosis. Thousands of persons are to-day taking hydrochloric acid and pepsin or some other exciting digestive aid for that vague entity, "stomach trouble," when the proper examination would show hyperchlorhydria or ulcer which could only be made worse by any form of acid. Nearly as many more are being dosed with alkalies when they need a contrary line of medication. Still others, suffering from a ptosis of one or more of the abdominal viscera—and their name is legion, especially among the women—are receiving various lines of treatment from drugs to osteopathy and from Christian Science to a four-weeks' fast with no possible benefit, when most of them would be relieved at once by having their displaced organs replaced and held up thereafter by either an operation, or, as I have seen in hundreds of cases, by a properly fitted abdominal supporter.

Instances could be multiplied indefinitely of failures in cases in which the diagnosis was in doubt, and yet, no consultation was had for economic or other reasons. Being no longer an aspirant for practice, I can afford to speak plainly and condemn strongly any guessing or prolonged dilly-dallying about the nature of an obscure illness whenever a consultation would probably clear up the doubt. When in such a case the patient or family refuse a consultation, the attendant would be justified in retiring from it. When, on the other hand, the family ask for a consultation and the medical attendant objects, he could have no cause for complaint if asked to make way for a broader-minded man.

Probably in no other feature is the usual current therapeutics more open to improvement than in the treatment of constipation. No affection is more common among civilized people and none is more generally treated ineffectively. The resort to purgative drugs for sluggish bowels is well-nigh universal. Patients rarely seek medical advice for the trouble early but dose themselves with laxatives till it has become chronic and aggravated. Even then, they will not often accept any curative treatment which involves time and expense, such as a course of massage, electricity or mechanical vibration (especially intra-rectal), some one of which, or a combination of them, nearly always proves effective in skillful hands, with the indispensable laxative diet and regulated exercises, often even in chronic advanced cases. Doctors should warn such patients emphatically that neither purgatives nor the milder laxatives ever cure constipation, and that, when continued very long, they may render it incurable by any method.

The diet in most chronic affections is a factor of the very greatest consequence. A more thorough study of dietetics would immensely improve the therapeutics of the average practitioner of whatever school or system.

The modern exact methods in the diagnosis and treatment of gastro-enteric affections should receive more attention in our medical colleges. If every practitioner were required to master them, or not having done so, would seek help from specialists in that line, not only in his frankly stubborn abdominal cases, but also in countless other obscure affections, he would very often be helped sooner to find the key which would solve the difficulty and obviate a harmful prolonged dependence on hypnotics or other inappropriate drugs.

While iron and arsenic will generally cure anemia after the cause has been removed, quinin and arsenic nearly always cure true malaria, and mercury and the iodids have rarely failed to rid the system in time of syphilis, to say nothing of salvarsan, it would be well if everybody, including practitioners of all sorts and the laity, could be impressed with the fact that many of the most powerful remedies are capable of doing harm in large or long-continued doses and that their safe and useful employment is often limited to the tiding over of emergencies or crises or the relief of intolerable pain, and that the cure can usually be accomplished only by a removal of the cause. In a very large proportion of chronic cases at least, the cause is some violation of health laws which demands a radical change in the patient's habits. Much of the present ineffective therapeutics results from attempts to cure people of maladies while they are continuing the bad habits which caused them.

No one can set bounds to the possibilities which may develop from the many new lines of treatment recently introduced, the antitoxins, the infernal secretions from various glands, etc. The results already achieved with them afford great hopes for the future of therapeutics.

After all, however, our best and most permanent cures will not result from drugs or other special lines of treatment alone, but from supplementing these by hygienic measures, by inducing our patients to live regular and temperate lives, eating and drinking simply and never to excess, chewing all food thoroughly, taking sufficient exercise and sleep, spending as much time as possible out in the open air and sunshine and, through abundant ventilation night and day, breathing pure air whenever practicable.

South Granada Avenue.

CARCINOMA OF THE CLITORIS*

CHARLES D. LOCKWOOD, M.D.
PASADENA, CAL.

Tumors of the clitoris are of infrequent occurrence, and malignant tumors are rare. The histopathologic study of these tumors has been neglected, and many of the reported cases are not accompanied by a pathologic report. I wish to report a case.

Patient.—Mrs. K., aged 70, mother of two children, healthy, except for her present complaint. For six years she has suffered from painful micturition and irritation about the vulva. For the past year the pain on urination has been almost intol-

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

* Because of lack of space the review of the literature is here omitted. It is given complete in the Transactions of the Section.

erable. She would refrain from micturition as long as possible, and then lie on her abdomen to urinate in her effort to assuage the pain. Treatment for vaginitis and irritating urine had only partially relieved her pain.

Examination.—Labia minora edematous and pale. At the site of the clitoris and to the right was a small, angry-looking, oblong mass, about 2 cm. long by 0.5 cm. in breadth. This mass was ulcerated at two points and necrotic, and intensely sensitive. Urethra, vagina and uterus were normal; urine normal; no palpably enlarged glands.

Operation.—Wide excision of labia minora and tumor mass in the region of the clitoris. Tissues were dissected down to the periosteum of the pubic bone. Urethra left intact. There was free hemorrhage, requiring many ligatures. Wound closed with buried catgut and kangaroo tendon, permanent catheter in bladder.

Postoperative History.—Wound healed without suppuration, and with complete relief of symptoms. Pathologic report showed epithelioma of the clitoris. Eight months later, the patient returned with enlarged inguinal lymph-nodes. These were removed, and microscopic examination showed metostatic growth of the same histologic character as the tumor of the clitoris. After a short period of freedom from pain, the deep inguinal lymph-nodes and those lying along the deep saphenous vein became involved. The entire right leg became edematous, there was rapid emaciation, and death occurred two years after first operation. No autopsy.

The appearance of epithelioma in this region is quite characteristic. Occupying the site of the clitoris is an intensely red, angry-looking, oblong tumor. There are irregularly shaped ulcers, with indurated base, elevated above the surrounding tissues, and varying in size from a ten-cent piece to a dollar. The surfaces of these ulcers are covered either by necrotic sloughing tissue, as in my case, or by fleshy granulations which bleed easily. The borders of the ulcer are hard, elevated, uneven, and covered with granulations. The edges of the ulcer are sharply cut, rose-red in color on their inner aspect, and covered with scabs at their periphery.

ETIOLOGY

Irritation plays an important rôle in the production of cancer in this region as in other parts of the body. Among predisposing causes are, psoriasis and pruritus vulvæ, pregnancy, injuries and cicatrices of labor, irritating discharges, eczema, syphilitic ulceration and inflammatory conditions in the surrounding tissues.

CLINICAL COURSE

Epithelioma in the region of the clitoris gives rise to few symptoms and signs in the early stages. At first, there is slight burning and pain on micturition, but these symptoms are in no way characteristic, and might be due to cystitis or caruncle. As the ulceration extends, pain increases, and there is often a foul discharge with the characteristic odor of cancer. Glandular involvement is late, affording a good prognosis if removal is early and complete.

In my case, there were no palpable glands, and yet recurrence took place in eight months. Future operations for malignancy in this region should follow the rules governing the surgery of epithelioma in other regions, i. e., early and complete extirpation of the tissue involved, with all glands receiving the lymphatic drainage of the area.

Sectarianism.—"Do not give yourself up rashly and blindly to any sect. Sects are implacable despots; to accept their thraldom is to take away from one's actions and thought all liberty."—Saying attributed to Nicon, father of Galen.

ISOLATION OF BACILLUS TYPHOSUS FROM A WELL

D. M. LEWIS, M.D.
NEW HAVEN, CONN.

According to Chapin, typhoid fever organisms have been identified in drinking-water by the agglutination tests but four times, as quoted from Gotschlich, and since by Wesbrook from the Mississippi River, and by Fox from the Scranton reservoir.

To these six I would add another. On June 28, 1911, I received two specimens of water for analysis from a country home from which a maid had been removed to the hospital that day as a case of typhoid fever. May 11, 1911, she had been sent there to open the house for occupancy; she began to feel ill June 19, and went to bed June 24. The supply of drinking-water was from a bored, stone-laid well of approximately 20 feet depth, subject to the surface wash of the cellar floor. From April 15 until May 15 laborers were at work on the premises, cleaning the well on the former date. The maid and one other did not leave the premises at all during the period stated, and on May 16 the family of ten arrived for the season. Stored in the cellar were several barrels of cider, which later showed evidence of having been freely tapped by the laborers. There was no record of previous typhoid on the premises, or of any association of a typhoid patient or carrier with the household. The bath-room and all taps were supplied from a large storage tank filled from a distant artesian well.

The two samples of water sent in were not labeled, and while identified by me as quart milk bottles with different dealers' stamps, were identified by the sender as one with a partial crack due to sterilizing, and one not cracked. The former showed chlorin content of 1.9 gr. per gallon, absence of nitrites, less than 0.1 gr. per gallon oxygen consumed in fifteen minutes at 212 F., and a negative presumptive test for colon bacilli in lactose-bile with 10 c.c., 1 c.c. and 0.1 c.c. at seventy-six hours. Plates, lactose-bile-agar, in duplicate, showed 1,000 odd colonies after forty-eight hours, the greater proportion microscopically resembling the colon-typhoid group; morphologically a motile Gram-negative coccobacillus, not producing gas in dextrose or lactose media, and tested against three serums of known typhoids, gave a reaction in all three in one-half hour, dilution 1 to 100; against the dried blood of six suspects, gave the reaction (approximately 1-to-40 dilution) in but one, as was the case with the stock typhoid culture. Since, I have used it parallel to a stock culture in upward of fifty bloods, and in one case obtained a reaction from a dried blood at the seventh day, whereas the stock culture gave it only at the tenth day.

The other sample showed a chlorin content of 1.5 grains, absence of nitrites, oxygen consumed less than 0.05 and a negative presumptive colon test. Plates in duplicate showed 120 and 128 colonies, none suggestive microscopically of the colon-typhoid group.

While the first sample was identified as that from the bottle with the partial crack, and, according to the sender, as from the well, to be absolutely sure, duplicates properly labeled were sent for identification on June 30, together with a spring-water sample from a source near the lodge of the premises. The chlorin content and the oxygen consumed identified the samples, yet more surely plates revealed in duplicate the situation above stated, though somewhat less typhoid organisms in the later sample. It was quite definite that the sample that

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showed the typhoid bacilli was from the house well, and considering the chemical partial analysis and the negative colon test, it seemed very reasonable that urine could be the only condition giving rise to the situation.

With the vaccination of the entire household and nothing further transpiring after three months, and with the above record, I consider that I am justified in assuming the contamination of the well by some of the laborers mentioned, and that the contamination was urinary in origin.

193 York Street.

REBREATHING IN ANESTHESIA

(*Concluded from page 1599*)

ABSTRACT OF DISCUSSION

ON PAPER OF DR. GATCH

DR. YANDELL HENDERSON, New Haven, Conn.: It seems to me dangerous to have a man breathe for any length of time through a long tube in that way. Too much stress is laid on various fixtures; there seems to be too much ventilation. We used to think we should give the patient plenty of oxygen; this apparatus is designed to keep carbon dioxid in. We already have a tube, the trachea. A man told me this morning of a case in which the trachea and blood-vessels were cut and as soon as he sewed up the trachea the man began to breathe normally. That shows that in order to keep a man breathing vigorously he must breathe through a tube, and Nature provides it. When a man breathes through his mouth he gets more ventilation than when he breathes through his nose. Carbon dioxid is a diffusible gas; if the skin is off and there is congestion and disturbed vascular conditions it is because of the absence of carbon dioxid; if carbon dioxid is put over the surface these changes do not occur. We do not draw fresh air into our lungs. It would be the simplest matter in the world for Nature to have devised a mammal as a long breathing animal in which the lungs collapsed every time; it would be a simple matter for the thorax to go down until the lungs collapsed completely; then when we took a respiration we would draw fresh air in. But it does not work that way; to a large extent it is an effort to prevent carbon dioxid from getting out rather than to get oxygen in.

DR. J. F. HULTGEN, Chicago: The case Dr. Henderson referred to came to me accidentally. There being no surgeon around, no one but interns, I had to sew up the man's trachea, which he had cut with suicidal intent. He was fainting from lack of blood when he came to the hospital. The man coughed and sputtered around on the table and so we anesthetized him through the tracheal opening. His breathing was very shallow, and I had an intern stand with a stethoscope to hear if the heart was beating (it had been suggested that we let the man alone, as he would die anyway). I put in two or three sutures on either side, not touching the cartilage, and as soon as I had these sutures in I had the intern tighten them, he holding them on one side and I doing the same on the other side, thus approximating the two ends of the trachea. As soon as we did this, the up and down movements of the chest became very extensive—more so than normal. It seemed to me this might be made use of in a great deal of thoracic work and lung surgery; that artificial tracheotomy of this sort might be advantageous. This was such a remarkable case that the nurses and those around were called to witness it. The author has brought up an interesting point about anesthesia. When I was an intern we used to give the anesthetic with a cone; we had the patient sleep for hours with this cone, pouring in a dram or two of ether at a time. The carbon dioxid theory of Dr. Gatch I think offers a good interpretation for this.

DR. W. D. GATCH, Baltimore: I do not oppose the use of the old-fashioned etherizing cone. It can probably be used so as to meet the physiologic requirements more nearly than an open mask.

REJUVENATION OF CULTURES OF TISSUES *

ALEXIS CARREL, M.D.
NEW YORK

The duration of the life of cultures of tissues, up to now, has been very brief. In approximately from three to fifteen days after the preparation of the culture, the growth becomes progressively less rapid until it stops altogether. Following this, the tissues die and the cells disintegrate.

It may easily be supposed that senility and death of tissues are not a necessary phenomenon and that they result merely from accidental causes, such as accumulation of catabolic substances and exhaustion of the medium. The suppression, then, of these causes should bring about the rejuvenation of the arrested culture and thus increase considerably the duration of its life. As it would be important, for many reasons, to keep tissues alive outside of the organism for a long period of time, I attempted to develop a method for the rejuvenation of the cultures of tissues.

The rejuvenation consists in removing from the culture substances that inhibit growth and in giving to the tissue a new medium of development. It is accomplished by extirpating with a cataract knife the fragment of coagulated plasma containing the original piece of tissue and the surrounding new cells, which are washed for several minutes in normal or slightly hypotonic Ringer's solution.

Afterward, the fragment is placed in a hypotonic medium composed of three parts of normal plasma and two parts of distilled water. The time of rejuvenation is chosen before the appearance of the changes of senility or when they are just beginning to appear. The process described is repeated more or less frequently according to the rate of the growth and the condition of the cells.

The results of rejuvenation were studied on cultures of connective tissue. The original connective tissue was taken from the spleen, the skin, the pericardium, and the portal vein of sixteen- to twenty-day-old chick fetuses. The first rejuvenations were made when the cultures were still in the period of full growth or at the beginning of the declining period. A few hours after the passage into the new medium, elongated cells or chains of cells radiated through the plasma, and the growth went on rapidly. The washing and passage into new media were repeated when the rate of growth decreased or when large granulations appeared in the cytoplasm of the cells.

Many of the cultures were rejuvenated five, six, seven, eight and even nine times. It was observed that after the seventh or eighth passage, fusiform cells appeared in the new medium as rapidly as after the second or the third passage. Thus, the occurrence of senility in these cultures was prevented and the length of their life very much prolonged. A culture of portal vein after the ninth rejuvenation is still growing actively on the thirty-first day of its life outside of the body.

These results demonstrate that rejuvenation of the cultures of tissues is possible. They show also that, under the conditions and within the limits of the experiments, senility and death are not a necessary, but merely a contingent, phenomenon.

* From the Laboratories of the Rockefeller Institute for Medical Research.

THE INFECTIVITY OF THE SECRETIONS AND THE DESQUAMATING SCALES OF MEASLES *

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Director Hygienic Laboratory
AND
JOSEPH GOLDBERGER, M.D.
Passed Assistant Surgeon, U. S. P. H. and M.-H. S.
WASHINGTON, D. C.

I.—SECRETIONS

In a previous communication[1] we reported two experiments with nasal and buccal secretions from cases of measles. In the first experiment we inoculated three monkeys with secretions obtained from a patient about twenty-four hours after the first appearance of the eruption. None of these animals gave any recognizable evidence of a reaction. In the second experiment we inoculated monkeys serially with secretions obtained from a patient on each of three successive days, beginning with the appearance of the eruption. The results of these serial inoculations, checked by passage experiments, clearly demonstrated that the mixed buccal and nasal secretions in this case were certainly infective at the time of the beginning rash and again forty-eight hours later. After the publication of these results an opportunity to carry our experiments further and, if possible, to determine the duration of infectivity of the secretions, presenting itself, we made inoculations from five additional cases at various periods of the disease.

In each case the secretions were obtained by irrigating the nose and mouth with saline solution and the inoculation was made by injecting beneath the skin of the ventral aspect of the thigh. As a rule, an abscess would form within twenty-four hours and this we promptly evacuated by free incision. Healing, as a rule, was rapid.

The inoculations with their results may be briefly summarized as follows:

Case 9.—Secretions obtained three or four days after beginning of the rash; Rhesus 94 a and Rhesus 94 b inoculated (this pair of animals having given no evidence of a reaction in a previous experiment with secretions, we inoculated them from this case). Result: No evidence of reaction.

Case 10.—A. Secretions obtained about twenty-four hours after the first appearance of the rash; Rhesus 129 and Rhesus 130 were inoculated. Result: Rhesus 129 gave some indications of a reaction which, however, were not characteristic; Rhesus 130 gave doubtful indications suggestive of a mild febrile reaction.

B. Secretions were a second time collected from this case, five days after the appearance of the rash; Rhesus 133 and Java 134 inoculated. Result: Rhesus 133 presented a slight rise in temperature after six days, not sustained; Java 134 presented a slight rise in temperature sustained for three days. These may have been reactions, but it is extremely doubtful and no definite interpretation is possible.

Case 11.—A. Secretions obtained not less than six hours before beginning rash; Rhesus 131 and Rhesus 132 were inoculated. Result: Neither animal presented any recognizable reaction.

B. Secretions a second time, collected four days after beginning rash; Rhesus 137 and Bonnet 138 were inoculated. Result: Monkey 138 died of a cachexia four days after inoculation; No. 137 presented no recognizable reaction.

Case 13.—Secretions obtained three days after beginning of rash; Rhesus 139 and Rhesus 140 were inoculated. Result: Neither animal presented any recognizable reaction.

Case 18.—A. Secretions obtained when eruption was beginning; inoculated Rhesus 135 and Java 136. (These animals had previously been used with negative result in an experiment with "scales," to be described later.) Result: Rhesus 135 presented a rise in temperature which was thought to mark a beginning reaction, but passage from this animal was negative, and as it was killed by the operation of bleeding, the clinical character of the reaction could not be observed; Java 136 presented a suggestive rise in temperature, of short duration, twenty-five days after inoculation. These results, though suggestive, we consider doubtful.

B. Secretions obtained again, four days after beginning of rash; Rhesus 147 and Rhesus 148 were inoculated. Result: Both animals gave indications suggestive of mild reactions, but not positively interpretable.

C. Secretions collected the third time, five days after beginning of rash; Rhesus 153 and Rhesus 154 were inoculated. Result: Rhesus 154 developed peritonitis and died; Rhesus 153 presented only doubtful indications of a reaction.

It would appear then that the nasal and buccal secretions in Cases 9, 11 and 13 were not infective for the monkey and that those from Cases 10 and 18 may have been mildly infective, but a definite interpretation is not possible.

Combining the results obtained in our first two experiments with those of the five here reported and viewing them as a whole, it would appear that the nasal and buccal secretions of uncomplicated cases of measles may be at times, but are not always, infective for the monkey.

Whether this applies to the human subject is another question; but it may be of interest to recall, in this connection, that Mayr[2] failed in one of his two human experiments to infect a child with nasal mucus from a case of measles in the eruptive stage.

We may add that the seven cases from which we obtained secretions in the foregoing experiments, while all well marked, were none of them characterized by severe catarrhal symptoms. In most of them, indeed, lacrimation and coryza were comparatively slight. This may have a significant bearing in explaining the results of our experiments.

Our experiments do not permit us to draw definite conclusions as to the duration of the infectivity of the secretions, but we think that our results tend to suggest a reduction, if not total loss, of infectivity with the approach of convalescence.

II.—SCALES

The rôle of the measles scales in the transmission of the disease has long been the subject of discussion, some observers claiming that they are infective and others that the disease is incapable of being transmitted by this means. Among the latter was Mayr[3] who, using the desquamating epithelium, failed in his attempts to inoculate children with measles by this means. On account of the important practical bearing which this question has, it seemed desirable to put it to experimental test. Accordingly, we made three attempts with epidermal scales to inoculate monkeys with measles.

Experiment 1.—The "scales" in this experiment were obtained from our Case 10, five days after the appearance of the rash, by briskly rubbing the forehead, cheeks, chin, back of neck, chest and back with a swab of absorbent cotton moistened with saline solution. The liquid pressed out of this swab

* From the Hygienic Laboratory U. S. Public Health and Marine-Hospital Service.

1. Goldberger, Joseph, and Anderson, John F.: An Experimental Demonstration of the Presence of the Virus of Measles in the Mixed Buccal and Nasal Secretions, The Journal A. M. A., Aug. 5, 1911, p. 476

2. Mayr, Frantz: Beobachtungen über Masern, etc., Ztschr. d. k. k. Gesellsch. d. Aerzte zu Wien., 1852, i, 13-14.

3. Mayr, Frantz: Masern, in Virchow's Hand. der speciel. Path. u. Ther., 1860, III, Part 3, p. 106.

was divided between Rhesus 135 and Java 136, the injection being beneath the skin of the ventral aspect of the thigh, precisely as in our "secretion" experiments. The results of these inoculations we consider negative.

EXPERIMENT 2.—In this attempt we used "scales" from four patients, namely, Nos. 14, 15, 16 and 17. These patients were in different stages of desquamation, varying from the beginning of, up to the seventh day of, convalescence. The "scales" were scraped from the face and arms of Case 14; from the forehead, neck, back and arms of Case 15, and from the forehead and temples of Cases 16 and 17, and all were mixed. With these mixed scales we inoculated two monkeys, namely, Rhesus 143 and Rhesus 144, as follows: The scales were divided into two portions; one was rubbed up in saline solution and the other allowed to remain dry. Some of the latter was introduced into the nose of each monkey by means of a glass rod and washed back with some of the saline suspension; the remaining saline suspension of scales was equally divided and injected subcutaneously. Neither monkey developed any indications of a reaction.

EXPERIMENT 3.—The scales for this experiment were obtained by scraping the face, forehead, temples, neck, arms and back of our Case 18, four days after beginning of the rash. These scales were rubbed up in saline solution and this suspension about equally divided between Rhesus 145 and Rhesus 146, the injection being beneath the skin. Neither animal gave any indications of a reaction.

The absolutely negative results of these three experiments would indicate that the "scales" employed were not infective for the monkey. Alone these experiments would hardly justify the inference that the desquamating epidermis in measles is not infective for man; but when viewed in the light of Mayr's results in children, we believe it highly probable, if not altogether certain, that the desquamating epithelium of measles, in itself, does not carry the virus of the disease.

On account of the cessation of the epidemic of measles in the city of Washington we have been obliged to bring our work temporarily to a close. The work which we here record and that which we have previously reported[4] in brief, we hope to publish in detail in a bulletin of the Hygienic Laboratory.

We desire again to express our grateful appreciation to our many friends who have aided us with cases of measles and to our colleagues at the laboratory and at Ellis Island for valuable assistance in the experiments.

Concentration of Energy.—Sir William Ramsay, in his presidential address before the British Association, says that "the whole progress of the human race has indeed been due to individual members discovering means of concentrating energy, and of transforming one form into another. The carnivorous animals strike with their paws and crush with their teeth; the first man who aided his arm with a stick in striking a blow discovered how to concentrate his small supply of kinetic energy; the first man who used a spear found that its sharp point in motion represented a still more concentrated form; the arrow was a further advance, for the spear was then propelled by mechanical means; the bolt of the crossbow, the bullet shot forth by compressed hot gas, first derived from black powder, later, from high explosives; all these represent progress. To take another sequence: the preparation of oxygen by Priestley applied energy to oxid of mercury in the form of heat; Davy improved on this when he concentrated electrical energy into the tip of a thin wire by aid of a powerful battery and isloated potassium and sodium."

4. Anderson, John F., and Goldberger, Joseph: Experimental Measles in the Monkey: A Preliminary Note, Pub. Health Rep., June 9, 1911, xxvi, 847. Experimental Measles in the Monkey: A Supplemental Note, Pub. Health Rep., June 16, 1911, xxvi, 887. The Period of Infectivity of the Blood in Measles, THE JOURNAL A. M. A., July 8, 1911, p. 113. An Experimental Demonstration of the Presence of the Virus of Measles in the Mixed Buccal and Nasal Secretions, THE JOURNAL A. M. A., Aug. 5, 1911, p. 476. The Nature of the Virus of Measles, THE JOURNAL A. M. A., Sept. 16, 1911, p. 971.

PHENOL (CARBOLIC ACID) GANGRENE

EVERETT J. BROWN, M.D.
DECATUR, ILL.

Although many cases of gangrene from the use of phenol have been reported in recent years, they were mostly the result of the application of wet phenol dressings to the fingers or toes. In the case which I report here, the gangrene was due to the use of phenolized petrolatum in treating a bruised finger-end. The ring finger was affected. The mother stated that the physician had extemporaneously mixed the petrolatum and phenol; hence the strength was unknown. It did not whiten the finger, however, and the gangrene did not develop for several days. The finger was completely black and not painful except at the line of demarcation. Amputation of the whole finger was required. The boy was 5 years of age.

The cases reported by Harrington several years ago were mostly due to the use of phenol solutions in varying strengths applied as wet dressings to the fingers, but the above case emphasizes his warning of the danger of using phenol in any form as a dressing for fingers or toes.

SODIUM PERBORATE AS A DRESSING IN THE TREATMENT OF DIABETIC GANGRENE

A. HERZFELD, M.D.
NEW YORK

I have, in the past three years, extensively used sodium perborate and published a short article[1] on the treatment of epistaxis with this drug in 1909, in which the method of its use was exactly described. Further, I have used it successfully, not only in epistaxis, but also in secondary hemorrhage after adenoid operations and tonsillotomies.

I have used sodium perborate frequently in infected wounds, in acute and chronic ulcers, and in three cases of diabetic gangrene, in which the results were so marked, that I wish to report these cases.

CASE REPORTS

CASE 1.—L. W., aged 48, up to two years previous enjoyed good health, had a family history of diabetes. For the previous two years he had been suffering from diabetes. In September, 1909, the patient had a phlegmon of the large toe of the left foot, which reached to the metatarsus. This was operated on. During the healing of this infection the third toe on the same foot began to become gangrenous; in a few days a line of demarcation formed; the patient refused amputation. The dead tissue was removed with the scissors, a dry sodium bicarbonate dressing had been used, but seemed to have no influence on the process. From October 15 sodium perborate was used by daily covering the whole surface with the dry powder (in the beginning twice daily). The wound rapidly developed healthy granulations, and Jan. 15, 1910, the patient was discharged completely cured. The sugar percentage varied from 1 to 3. Acetone was present. The patient died six months later of a complicating nephritis.

CASE 2.—V. C., aged 42, female, colored, up to four years previously was in good health; since that time she complained of severe pains in muscles and joints, probably of rheumatic origin. Examination Oct. 5, 1909, revealed a large abdominal tumor (myoma) extending to the umbilicus, a loud systolic murmur over the mitral valve with hypertrophy (mitral regurgitation). On the inner surface of the left thigh was an ulcer of the size of a silver dollar, edges black and gangrenous, with flabby granulations. The patient stated that she had, fifteen years prior, a "sore" on the vulva. This ulcer on the thigh was treated as of luetic origin. The result was

1. THE JOURNAL A. M. A., March 13, 1909, p. 890.

deterioration in the patient's condition and no improvement whatsoever in the ulcer. The urine was examined Nov. 2, 1909, and showed sugar but no acetone. The ulcer was now dressed with dry sodium perborate powder. It began to heal and was completely healed by Dec. 26, 1909.

CASE 3.—S. H., aged 54, had a family history of diabetes; one brother died of Raynaud's disease. The patient, during a severe attack of pneumonia after an influenza, had numerous injections of camphor in oil (1 camphor to 4 sterilized olive oil) given, which injections caused six gangrenous ulcers on the thigh. Three of these coalesced and made an ulcer 3 inches in length and 1½ inches in width, and when the gangrenous material was removed was ½ inch deep. The wound was dressed twice daily for six weeks, Jan. 17 to March 3, 1911, with sodium perborate in powder form and slowly but steadily healed completely. The patient during this time had 1 per cent. of sugar but no acetone.

All of these patients were placed on appropriate diet and general treatment for diabetes.

224 West Twenty-Fourth Street.

URETERAL CATHETER COUPLER

BURTON HARRIS, M.D.
BROOKLYN

Hypodermic needles, soft rubber connections and various other makeshift devices hitherto employed in coupling a syringe to a ureteral catheter, are unsatisfactory because they permit leakage. A conical needle made after my suggestions obviates this difficulty.

Ureteral catheter coupler.

The instrument here illustrated is 3.17 cm. in length, measuring 13 French at the base, and the tip is sufficiently small to be readily introduced into the lumen of a 5 French catheter. It was designed to fit the Ehrlich-Hata Record syringe, for the reason that the latter is of convenient size and has the obvious advantage of a screw connection. However, it may be attached to the Janet-Frank or other syringe by means of a section of soft rubber tubing.

475 Greene Avenue.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. ITS ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

BISMON.—Colloidal Bismuth Oxide.—Bismon is claimed to be a preparation of colloidal bismuth meta-hydroxide containing about 20 per cent. metallic bismuth.

It is stated that Bismon results from the action of sodium lysalbinate and sodium protalbinate on bismuth salts.

Bismon is a light brown granular substance, forming with water, a fairly stable opalescent colloidal suspension (in these suspensions colloidal bodies are in such extreme state of subdivision that they were formerly supposed to be in solution and are still commonly so considered). In aqueous suspensions, decomposition manifested by the appearance of a black deposit is said to set in after three to four weeks. The aqueous suspension is not affected by metals.

If an aqueous solution of egg albumin be added drop by drop to a 1 per cent. aqueous suspension of bismon a white precipitate forms, soluble in an excess of the albumin solution.

If hydrochloric acid be added to an aqueous suspension of bismon a white turbidity soluble in an excess of the acid appears.

If hydrogen sulphide be passed into a 1 per cent. suspension of bismon a dark brown color, but no precipitate is formed. The addition of acid to this suspension produces a brown precipitate.

Bismon, when heated, chars, with evolution of fumes of burning nitrogenous matter, yielding finally a residue, which when dissolved in nitric acid responds to tests of identity for bismuth.

If 1 gm. bismon be gradually heated with fusion mixture, until all carbonaceous matter has been destroyed, the fused mass when cooled, dissolved in nitric acid, the bismuth precipitated with ammonium carbonate solution, the resulting precipitate when ignited to constant weight should yield at least 0.2198 gm. bismuth oxide (Bi_2O_3) corresponding to 19.7 per cent. bismuth.

Actions and Uses.—Bismon has the actions of other preparations of bismuth, but it is claimed that, on account of its solubility (property of forming colloidal suspension) it is more rapidly distributed over the mucous membrane of the gastro-intestinal tract.

It is said to be useful in acute and chronic intestinal derangements and in various forms of dyspepsia in infants and young children.

Dosage.—0.5 Gm. (7½ grains) in 5 to 10 per cent. solution (colloidal suspension) in water. The solution (colloidal suspension) may be added to milk or other appropriate liquid food.

Manufactured by Kalle & Co., A. G., Biebrich on the Rhine, Germany. (Kalle & Co., Inc., New York.) Trademarked in Germany. Not patented or trademarked in U. S.

Therapeutics

ANESTHESIA AND ANESTHETICS

(Continued from page 1537)

ADMINISTRATION OF ETHER

A very common method of the administration of ether has been by means of a cone made of paper and lined with a towel or napkin, with perhaps the addition of a sponge or some absorbent cotton. The ether in small amount is poured into the cone, and it is then placed over the nose and mouth of the patient. As the ether evaporates from the towel or other absorbent, fresh ether is of course added.

This method has some serious objections, the most important of which is that the strength of the ether vapor inhalations, i. e., the percentage of ether vapor contained in the air inhaled, is extremely variable. In practice it is generally attempted to counteract this variability by not holding the cone close to the face of the patient immediately after the ether has been poured into it, but even this does not allow of an accurate administration or of an administration continuously of one even strength of the vapor.

Various forms of apparatus have been devised to counteract these objections and to enable the ether to be administered continuously of a uniform strength. While these methods of administration are practicable in a large hospital where a physician is always at hand who is familiar with their use, in general practice and in the hands of men who do not frequently administer an anesthetic, and therefore are not especially skilful, it is desirable to find a simple method which will be at the same time efficient and safe.

A method of administering ether in continuous, regular quantity has been called the dosimetric method, which consists essentially of allowing the ether to fall, drop by drop, on a piece of thin fabric, such as flannel, which is supported on a wire mask like the well-known Esmarch chloroform mask. One of the originators of this method is Allis, of Philadelphia, who presented to

the profession, in 1874, the so-called Allis inhaler, which consists of a large number of layers of flannel supported on a metallic frame, the whole surrounded by a cuff of rubber (in the best examples) which is open at both ends. Of the different inaccurate methods of administering ether, perhaps this is as good as any. The ether is dropped on the flannel through the top of the inhaler, and the drops should be well distributed over the flannel. This allows a considerable admixture of air, so that the patient does not suffer from lack of oxygen. At present, however, many prefer the wire mask covered with a single layer of flannel.

One great objection to these inhalers is that the rapid evaporation of the ether greatly chills the air which is taken into the lungs, and this may predispose to a post-anesthetic pneumonia.

The administration of ether is often attended by more or less discomfort. Early in the inhalation there is produced considerable irritation of the respiratory passages, so that the patient has a choking sensation and feels an irresistible desire to cough. This is probably due in most instances to the ether being administered too concentrated. If the ether is given in a very small quantity at first and then gradually increased in concentration, these unpleasant sensations may generally be avoided without any particular increase in the total time required to produce complete anesthesia. It is absolutely unjustifiable to push the anesthetic so that the patient has a closure of the glottis and a sensation of suffocation. Such an administration of ether is the cause of the spasmodic contractions of the muscles and the fighting of the patient for air. It is as sensible as would be deliberate choking of the patient. If an insane patient or a young child fights an anesthetic, ether should not be used until the patient has been anesthetized by chloroform or by nitrous oxid gas.

As the patient approaches complete anesthesia considerable annoyance is often caused by the dropping back of the tongue and the consequent interference with respiration. This may generally be avoided by placing the ends of the fingers of each hand back of the angle of the jaw and lifting it forward, or by lowering the head and extending the neck, with chin high. In some cases it may be necessary to seize the tongue with a pair of forceps and draw it forcibly forward. If the head is turned to the side, the tongue is less likely to fall backward.

A very unpleasant feature of the administration of ether in many patients is the stimulation of the muciparous glands of the mouth and throat, so that the throat becomes filled with mucus, which causes gurgling, nausea, and even choking. It often requires frequent swabbing of the mouth and throat with gauze, or better with pieces of sponge, grasped in a pair of long forceps. Such a profuse secretion is sometimes avoided by the hypodermatic administration of atropin (1/150 to 1/100 of a grain), from half an hour to an hour before the administration of the anesthetic.

It has been suggested to inhibit this profuse secretion by means of epinephrin solutions. Such solutions have been sprayed into the throat, or it has been suggested that a few drops of a weak solution (perhaps 1 to 10,000) be placed in the inhaler along with the ether, once in five or ten minutes. If the epinephrin solution is sprayed into the throat directly, and probably if it is carried in with the ether vapor, contraction of the arterioles of the throat will certainly occur. The exact amount of epinephrin that will actually be absorbed in this manner is of course problematical. It should not, however, be used carelessly, as it has long been demonstrated that epinephrin is, if introduced into the blood in any considerable quantity, depressant to the respiratory center, which of course would be very undesirable in ether narcosis.

The rapid method of administering ether, termed the "ether rausch," which has been used much in some clinics in Germany, and is mentioned by Dr. William T. Coughlin (THE JOURNAL, July 1, 1911, p. 17), is perhaps occasionally useful, but seems generally hardly justifiable. The patient breathes, for a portion of a minute, pure ether undiluted with any gas or air. Anesthesia is almost immediately temporarily complete, and minor cutting can be done, the anesthesia lasting from three to five minutes. There seem to be rarely after-effects like nausea and vomiting. On the other hand, theoretically it does not seem very safe.

For method of administering ether by means of a tube passed through the nostrils, and by the rectum, see THE JOURNAL, July 30, 1910, page 402.

Ether has been given intravenously by mixing it with cold water and then heating over a water bath so that the excess of ether evaporates, leaving a 4.68 per cent. solution. From 1,000 to 3,000 c.c. of such a solution have been infused into the blood-stream without any untoward symptoms (*München. med. Wchnschr.*, July 11, 1911). This method has been used in the surgical clinics at Greifswald. It would seem that such a method of administering ether would be very rarely justifiable.

Before commencing the administration of the anesthetic, the anesthetist should give careful attention (1), to the operating-room; (2), to the emergency table; (3), to the patient.

The *operating-room* must be warm, and the operating-table as comfortable as possible for the patient. There must be plenty of blankets. The legs and arms, a low pillow for the patient's head, and a pillow for the back, should all be arranged to be as comfortable and warm as possible without, of course, interfering with the exigencies of the particular operation. It is advisable to have a strong, well-working faradic battery, an oxygen tank (it should be remembered that Professor Henderson thinks too much oxygen in ether shock is inadvisable, and even advises carbon dioxid gas), transfusion apparatus, and warm, aseptic physiologic saline solution.

The articles on the *emergency table* should comprise:

1. Chloroform.
2. Ether.
3. Petrolatum.
4. Boric acid eye-drops (1 per cent.)
5. Tongue forceps.
6. Long forceps for swabbing, and properly made gauze or cotton pledgets (no ravelings), or pieces of sponge.
7. A mouth-gag, or cork, or a piece of rubber.
8. A large needle threaded with strong silk.
9. A pus basin.
10. Towels.
11. Two hypodermic syringes.
12. Atropin sulphate tablets (each 1/200 of a grain). (The amount is small, that the dose may be repeated, if needed.)
13. Strychnin sulphate tablets (each 1/40 of a grain). (The amount is small, that the dose may be repeated, if needed.)
14. Ampoules of saturated solution of camphor in sterile olive oil.

15. Ampoules of aseptic ergot.

16. Epinephrin solution in aseptic ampoules, 1-10,000.

The Patient:

1. A twenty-four hours' specimen of urine should, if possible, have been examined; certainly a single specimen should have been examined.

2. The condition of the heart and arteries should have been examined and the best anesthetic selected.

3. The patient should have received no solid food for a number of hours before the operation. If the operation is done early in the morning, it is best, three hours before the operation, to give either a cup of hot bouillon or a cup of black coffee.

4. The bowels should have been properly moved, generally by the aid of some cathartic, and often an enema is advisable at least an hour before the operation.

5. The urine should have been passed immediately before the administration of ether is begun.

6. False teeth should be removed. The nose, throat, mouth and teeth should be cleansed with an antiseptic wash. Hairpins should be removed, if the patient is a female, and the hair should be properly bound up under a cap; it is better that this cap is not made of rubber, as the head is likely to become very moist with perspiration, if the cap is impervious.

7. The face should be anointed with petrolatum, as the vapor of ether is irritant to the skin.

8. The rate of the pulse and the feel of the radial and temporal arteries should be noted before the anesthetic is begun.

The anesthetist should be a physician who has been especially trained for this work. He should give his entire attention to the anesthesia, and his attention should not be diverted from his own work to watch the operation, or for any other purpose. He should keep himself aware of the condition of the heart by holding the index-finger of one hand over the temporal artery where it passes over the zygomatic process in front of the ear. He can be aware of the condition of the respiration either by the rise and fall of the chest, or by feeling the exhalation of the air through the mask.

Next to the pulse and respiration, the pupil is the most important index to the condition of the patient. Sudden dilatation of the pupil, especially if accompanied by hiccough, are grave symptoms, and should lead to the immediate suspension of the anesthesia and the withdrawal of the ether.

In order to determine when anesthesia is complete, many separate the eyelids and touch the conjunctiva with the tip of the finger. This is a dangerous practice, and should not be followed, as the eye may be injured or infected.

The most useful test for determining complete anesthesia is raising the arm. If this falls without any muscular contraction, the anesthesia is complete. This condition may be present shortly after the administration of the ether is commenced, the so-called primary anesthesia, which may be followed by a brief return of muscular activity. The continued administration of the ether will soon produce complete anesthesia. If the operation is an abdominal one, a little ether poured on the abdomen will soon show, by reflex action from the cold, whether the patient is thoroughly anesthetized or not. Also, manipulations of any kind at the region to be operated on will often awaken an incompletely anesthetized patient when other signs have apparently pointed to complete anesthesia.

The patient should be kept as lightly under the influence of the anesthetic as is possible. Very deep anesthesia should be avoided. The anesthesia should be as brief as possible, but this, of course, rests with the operator. As soon as an operation is completed, the ether should be withdrawn. Often this can be done before the final stitches are inserted and the dressing applied. If the patient has not been too deeply anesthetized, he should begin to regain consciousness shortly after the withdrawal of the ether.

One of the most troublesome of the sequelæ of the administration of ether is nausea and vomiting. The exact cause of this has not been determined definitely. Some have believed that it was due to the irritation of the mucous membrane of the stomach from the ether swallowed, but this is probably not so, at least in all cases. Various methods have been proposed to combat this disagreeable symptom. All are more or less successful. If morphin has been administered before the operation, nausea does not occur as soon as when it has not been administered. It is often advisable to give an injection of morphin and atropin directly after the patient comes out of the anesthesia, that he may not suffer pain and shock from such pain. Such an injection prevents the nausea, at least for a number of hours. Hot water, administered frequently in teaspoonful doses, is often a successful, simple treatment. If mucus and gas are eructated, or actually vomited, large draughts of hot water should be taken, that the stomach may be thoroughly washed out by vomiting, or by the liquid passing the irritant onward into the bowel. Some surgeons believe in washing out the stomach. This is not often advisable, but is indicated if bile is regurgitated, or if blood is extravasated into the stomach. Oxygen inhalations have been suggested (The Journal, April 27, 1907, p. 1421). Pure olive oil, in ounce doses, has also been found useful in this condition (The Journal, Dec. 18, 1909, p. 2094). Of course, the oil would soothe the stomach, and would be especially sedative, if there was increased secretion of hydrochloric acid, which secretion oil inhibits.

As soon as possible after anesthesia, a starchy food, as oatmeal, should be given to prevent a possible development of an acidosis.

A not infrequent sequence of the administration of ether is an irritable bladder and more or less kidney congestion. This is shown by a slight albuminuria and by a diminished amount of urine. Such an irritation may be caused not only by the ether itself, but also by the profuse sweating and the small amount of liquid which has been ingested, causing the urine to become very concentrated and therefore irritant. To prevent such irritation, it is often good treatment, after an operation, to inject a pint of hot water, with or without salt (a physiologic saline solution), into the colon. Such liquid is rapidly absorbed and dilutes the blood and all the secretions and increases the excretion of urine. Such frequent irritation of the kidney renders it inadvisable, unless there is positive necessity, to administer ether a second time to the same patient within so short a period as a week. In fact, it has been shown that serious kidney congestion can occur following an ether or chloroform narcosis several weeks subsequent to the anesthesia. The fact of this tendency to irritate the kidneys makes ether as an anesthetic generally contra-indicated when there is kidney disturbance, especially if there is any acute inflammation present.

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Dr. P. B. Hawk (*Arch. Int. Med.*, Aug. 15, 1911, p. 177) has shown that after ether anesthesia the urine excretion function of the kidneys is diminished. This of course has been clinically long recognized, and has been attributed to the greatly diminished amount of water ingested for a number of hours and to the profuse sweating caused during anesthesia. Hawk has seemed to show that there is actual diminished activity of the kidneys, perhaps from depressed circulation. Normally, the kidneys in a few hours after the anesthesia is ended, begin to act efficiently, especially if a physiologic saline solution is placed in the colon.

To hasten the elimination of ether from the system, plenty of fresh air should be allowed in the room, provided it is sufficiently warm. The patient, under any circumstances, must be surrounded with hot-water bottles and blankets so that he may not lose too much heat, or better, may even acquire heat, during the shocked condition subsequent to anesthesia, such a condition being generally present. Such care that the patient does not lose heat is an important preventive of surgical shock.

If much blood has been lost and the patient is in a condition of collapse, besides administering physiologic saline solution by the rectum, intravenous or subcutaneous transfusions of saline solutions are often advisable. Raising the foot of the bed should also not be forgotten in this condition. It may be here parenthetically stated that when the Trendelenburg position has been long used in an operation the return of the patient to a level should be brought about gradually, lest anemia of the brain be caused.

When a patient has lost a large amount of blood, or there is a condition of shock already present, or it is feared that the patient is not going to stand the operation well and yet the operation must be done, the blood from one or both legs has been shut off by tourniquets. When the circulation entirely ceases in the extremity so treated, the blood there contained is, of course, free from the anesthetic, and may be turned in to the general circulation at such time as the anesthetist or the operator decides. The patient will of course be revived by such blood. Perhaps the extremity and its blood should not be shut off from the general circulation more than half an hour lest some trophic or nerve changes occur. Danger from clotting and therefore from emboli might well be considered, if there are diseased arteries. High blood-pressure and cerebral congestions may contra-indicate this procedure.

Another untoward effect is sometimes observed in the supervention of an attack of pneumonia. It has been proved that either ether, chloroform, or alcohol diminish the resistance of the cells to bacteria. Pneumonia is more apt to supervene when the narcosis has been deep and protracted. Many believe that it is also encouraged by the inhalation of cold air with the ether, and it also undoubtedly happens that the development of pneumonia is promoted by the exposure of the patient, while under the influence of the anesthetic, by allowing the coverings to slip off from his body and limbs, or from allowing him to lie in coverings or clothing saturated with blood or other fluids used during the operation. It is exceedingly important that a patient under an anesthetic should be kept warm and dry. Various devices have been designed for keeping the patient warm by appliances connected with the operating table. These are often useful, but caution should be exercised lest the patient, while unconscious, should be burned by such appliances.

As just stated, pulmonary congestion and post-operative pneumonia are frequent serious occurrences after prolonged anesthesia, especially after prolonged etherization. Various factors have been assigned an influence in the etiology of these pulmonary conditions. Among others, it has been alleged that probably the chilling of the respiratory organs by the evaporation of the anesthetic has an important part. It has been observed that anesthetics seemed to act better in warm climates and in warm weather. From these observations it has been deduced that if the anesthetic is warmed before it is administered, there will be less danger of pulmonary sequelæ. During the last ten or fifteen years many anesthetists have insisted on having the anesthetic itself, or the vapor, warmed before it is inhaled by the patient. This may be accomplished in various ways. For ordinary use, the warming of the can of ether or the bottle of chloroform to about the temperature of the body would seem to be most desirable. The inhalation of an anesthetic at this temperature results in less irritation in the throat at the beginning of anesthesia, the early accession of complete anesthesia, the necessity for a smaller amount of the anesthetic during the operation, and hence fewer after effects.

Many patients complain of backache after an operation. This is probably due in many cases to straining of the muscles of the back on account of the back not being properly supported while the patient is unconscious. In order to avoid this a small pillow should always be placed under the lumbar region of the patient while he is on the operating table.

The question frequently arises whether to anesthetize the patient in the operating-room and on the operating table, or in an adjoining room. With reference to this it should be urged that the less a patient is moved about after the administration of the anesthetic is commenced, the better. On the other hand, a nervous patient should generally be anesthetized in an adjoining room, and if possible, on a stretcher or rolling table, so that he may be transferred to the operating-room and then to the operating table with the least possible general disturbance.

As elsewhere stated, the ability to withstand infection is greatly reduced after an etherization. How long this susceptibility to infection persists it is difficult to determine, as it probably varies in different individuals. It seems that the opsonins of the blood and the ability of the polymorphonuclear cells to increase in number and act as phagocytes are certainly diminished. It has been shown by Graham (*Jour. Infect. Dis.*, 1910, viii, 147, and THE JOURNAL, March 26, 1910, p. 1043), that when lecithin is added to blood whose ability to fight disease is thus diminished, it rapidly brings its resistance to infection up to normal. Olive oil given by the rectum is also shown to increase the opsonic power of the blood. When it is remembered that ether and chloroform have been shown to combine with fat elements and certainly with lecithin, the administration of a lecithin preparation or the administration of rectal injections of olive oil seems scientifically good treatment after etherization.

CONTRA-INDICATIONS OF ETHER

Ether is contra-indicated if there is present disease either of the lungs or kidneys. Other contra-indications to the use of ether are chronic alcoholism, aneurysm, very high blood-pressure, and an atheromatous condition of the arteries.

(To be continued)

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CAN HAIR TURN WHITE IN A NIGHT?

A cherished popular belief is that of the sudden blanching of the hair from fright, worry or other severe mental strain. It plays its part in the drama and in fiction, while history records its famous instances. Who has not heard that Marie Antoinette's hair turned white during the night before her execution, or that the deeds and terrors of St. Bartholomew's night blanched the hair of Henry the Fourth? Most of us have wondered how the change could come about so rapidly as tradition relates; and yet so universal is the belief in this phenomenon that few have the hardihood to doubt it. One may accept one theory, that a sudden entrance of air or gas into the hairs makes them gray or white, or one may accept Metchnikoff's idea that it is all done by hungry, pigment-loving phagocytes, or one may take the stand of Stieda and boldly say that it isn't so at all. This refractory German first proves that such a thing couldn't possibly happen, and then, not satisfied, declares that it never did happen. With equal disregard of folk-lore, history and medical literature, he points the finger of doubt, and challenges many long-deceased historians and physicians to arise and prove their stories.[1]

In an extensive article[2] he shows that when the hair turns white under ordinary conditions it does so in one of two ways. Either the pigmented hairs fall out and are replaced by unpigmented hairs, or, less commonly, pigment-production stops in a growing hair and the colorless portion gradually replaces the darker outer segment. In neither case is there a bleaching or removal of existing pigment from the hair, leaving it colorless. Metchnikoff's theory of removal of pigment by phagocytes, and the older hypothesis of bleaching of the hair by formation of gas bubbles, are both, Stieda believes, entirely incorrect.

As this work supports the theory that hair becomes white only by replacement, and as the growing of a new crop of hair in a single night is beyond the possibilities of even the Seven Sutherland Sisters, the author must needs discredit all tales of such miraculous transformation. This he does *in extenso*, taking up the best-known instances of such supposed blanching of hair, and finding them all lacking in support sufficient to meet critical consideration, much less such control as to establish an acceptable scientific demonstration. For example, he finds that Charcot doubted the story of Marie Antoinette's sudden loss of hair pigment, stating that although the queen certainly was gray at the time of her execution, yet this was no novelty, for she was also gray nine months before, at the time the king met his sudden end at the hands of the revolutionists.

As for the rest of the reputed cases, many are nothing better than old-wives' tales, while others are examples of medical credulity substituted for healthy skepticism and careful investigation. The explanation for many is unkind, being simply that the keeper of the jail or dungeon in which the unhappy heroine or hero was confined neglected to furnish his guest's dressing-table with the hair-dye to which the latter had been accustomed at home, and that Nature asserted herself before release or execution. Verily the iconoclast respects nothing—not even the gray hairs of royalty.

1. Stieda, L.: Deutsch. med. Wchnschr., 1910, xxxvi, 1484.
2. Anatomische Hefte, 1910, xl, 285.

MILK-BORNE TONSILLITIS

Epidemics of "septic sore throat" in England have from time to time been attributed to milk-supply, but in this country such outbreaks seem to have been less common, or, at all events, less commonly recognized. The fact that the remarkable epidemic of virulent tonsillitis occurring in Boston and vicinity last spring has been carefully investigated is therefore matter for congratulation. The Boston epidemic, including the cases in Brookline and Cambridge, affected over one thousand persons, forty-eight of whom died. There is now presented unimpeachable evidence showing that the epidemic was spread in milk from the Southboro farm of the Deerfoot Company, the infection of the milk apparently originating in an epidemic of the same character which prevailed in Southboro and neighboring towns during some six weeks preceding the Boston outbreak.

Apart from the high degree of virulence apparently possessed by the streptococcus strain concerned in the epidemic, there are other features of special interest. The milk-supply implicated has been for some years one of the most favorably regarded among the large Boston supplies. This was due not only to the facts that excellent regulations were in force to avoid contagion and that cattle and farms were carefully inspected, but also to the fact that the whole process was controlled by an experienced and well-known laboratory worker under contract with the Deerfoot Company. The recent searching inquiry has failed to reveal any instance of neglect or lack of precaution. In a word, the conditions surrounding the implicated milk-supply would be considered ideal and to-day are so considered by the best authorities on dairy sanitation. Here infection leaped the barriers of all known precautions. "Boston has suffered severe lessons along this line. In 1907 there

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were 717 cases of scarlet fever traced to one milk-supply, and seventy-two cases of diphtheria to another. In 1908 there was a milk-borne outbreak of typhoid fever totaling 400 cases. In 1910 there was another scarlet fever epidemic of 842 cases. Including the present outbreak, there have been over 3,000 cases of epidemic disease traced to milk in the immediate neighborhood of Boston in a period of five years."[1]

The Boston epidemic seems to cast some doubt on the value of the method of controlling the public milk-supply by inspection rather than by pasteurization, but cannot be regarded as wholly condemning efficient inspection, as inspection raises the general standard of cleanliness and consequent safety of milk. Accidental contamination under almost ideal conditions is always a possibility. Our readers will be reminded of the recent epidemic of diphtheria among the students and faculty of the University of Minnesota on which we have commented.[2] In this case the source of infection was one of the cleanest and best-regulated dairies in the Minneapolis district, the contamination coming from a human source. The Boston epidemic demonstrates again that milk from a "model" farm may, through accidental contamination, spread contagion widely. In this latter case there was no evidence that diseased cattle were the source of infection, the facts discovered in the investigation rather strengthening the hypothesis of a human origin. Probably a temporary "carrier" was concerned. Inspection is an expensive process and many sanitarians have pointed out that in the nature of things it cannot afford absolute security, a statement that seems to be confirmed by the instances mentioned. With no desire to advocate or approve of the abandonment of careful inspection of dairies, notwithstanding its expensiveness, we must admit that the results of investigation of these two epidemics tend to support the advocates of general pasteurization of public milk-supplies.

UNDERNOURISHMENT AND GROWTH

The interrelation of malnutrition and growth is a topic of preeminent interest in practical pediatrics as well as in physiology. The expression "retarded development" is ordinarily applied to a failure to gain in body weight. There are obviously two simple clinical methods of measuring growth, namely, by body weight and body length. But both of these factors which afford the external expression of internal developmental changes are not necessarily halted at the same time. Indeed, it has frequently been noted that poorly nourished atrophic infants may continue to grow in size to a considerable degree.[3]

At first glance it may seem somewhat anomalous that an individual should exhibit growth in the absence of any increase in body weight. Quite recently several experimental contributions have thrown a new light on this question. H. Aron,[4] some of whose interesting studies on nutrition in the Philippine Medical School have already received notice in THE JOURNAL, has made careful measurements on dogs to ascertain whether or not it is possible to suppress the process of growth entirely by restriction of food, and if so, for how long. Among a number of comparable animals in each series, some received just enough food to keep their body weight constant; others, varying additional amounts, so that more or less intensive growth resulted. The striking outcome was that if a growing dog is kept at a constant weight, or even at a slightly decreasing weight, the bones continue to increase in weight and therefore to grow, although not quite so rapidly as in a normally fed control animal. If the bones have absolutely and relatively increased in weight, while the total weight of the animal has been kept constant, it is obvious that other parts of the body must have lost in weight.

The glandular organs are apparently not seriously involved in this process of consumption. The analyses indicated that the tissues which have undergone loss during the underfeeding are the muscles and fat. Of peculiar interest is the observation that the brain has nearly the same weight in a growing dog kept at constant weight as in a normally developed animal. This reminds one of the condition in so-called infantilism, in which children may exhibit a marked mental development despite the retardation of growth in its more obvious aspects. The losses in Aron's dogs, aside from the fat, involve a quantity of protein especially from the muscles, while a great proportion of the body tissue, notably in the blood, is replaced by water. The latter, with the increase in the skeleton, replaces the body materials lost.

A point of practical interest lies in the fact, here experimentally demonstrated, that during the period of growth a stationary condition in respect to body weight may actually be the expression of starvation. Only in the last stage of emaciation, when there are no body reserves to draw on, is growth entirely suppressed.

Similar observations have been made by Waters[5] on growing cattle. This author says that ungrown animals that had been previously well nourished continued to increase in height and in width of hip for a considerable length of time, even though on a starving ration. Apparently, the animal organism is capable of drawing on its reserve for the purposes of sustaining the growth process for a considerable time and to a considerable extent. His experiments indicate that after the reserve is drawn on to a certain extent to support growth, the process ceases and there is no further increase in height or in length of bone. From this point on, the animal's chief business seems to be to sustain life.

1. Winslow, C. E. A.: Boston Transcript, Oct. 31, 1911.
2. THE JOURNAL A. M. A., July 1, 1911, p. 30.
3. Fleischer: Arch. Pediat., October, 1909.
4. Aron: Wachstum und Ernährung. Biochem. Ztschr., 1910, xxx, 207; Nutrition and Growth I, Philippine Jour. Sci., 1911, vi (B), 1.
5. Waters: The Influence of Nutrition on Animal Form, Bienn. Rep., Kansas State Board of Agric., 1911, xxii, 199.

Few comparable measurements have been made on undernourished children. Data published by Freund[4] point, however, to similar phenomena in human development, where some growth in length is not checked by underfeeding.

From the foregoing it appears as if "the tendency to grow in a young animal is greater than the tendency to maintain life" (Aron). The tendency to grow is possessed principally by the skeleton, which sets the pace for the other tissues to follow if possible. It is highly significant to find that the capacity to grow is not necessarily lost through early malnutrition. Re-alimentation and renewed growth follow more or less normal courses, so that, as the recent measurements by Birk[5] on children show, earlier losses may be regained.

The facts reviewed are of importance in practical pediatrics. Aron says: "A child which does not increase in weight or increases slowly is so undernourished that part of its own body substances are being consumed. We can go even further in our conclusions. If a child does not present the weight which we have a right to expect at its age, assuming that it was born with a more or less normal weight, this child's body does not have the normal composition. It will contain a higher percentage of bones, a lower content of fat and muscle tissues, and a higher content of water." To feed such children properly is fundamental.

PREVENTION AND NOT TREATMENT

An osteopathic association recently adopted a resolution favoring a national department of sanitation, but opposing a national department of medicine. This is encouraging, and this osteopathic association is to be congratulated on its broad-mindedness and perspicacity. We did not know, however, that anyone favored a department of medicine, or that there had been a suggestion that one be established. THE JOURNAL has again and again insisted that the sectarian adherents were exciting themselves unduly and needlessly. A national department of health would be charged with the work of studying the cause and methods of preventing diseases. It would have nothing to do with the treatment of individual patients or with the practice of individual physicians. Those who object to the Owen bill on such grounds are incapable of distinguishing between the scientific study of disease in the abstract and the care of the patient suffering from the disease. The first is an important public duty. The second is a matter of personal choice. The vague and awful charges of "establishing a state school of medicine," "medical tyranny," "perpetuation of a medical trust," "interference with personal liberty," etc., are made either through ignorance or through a desire to mislead the public as to the real purpose of such a measure.

4. Freund: Zur Pathologie des Längenwachstums bei Säuglingen, . . . Jahrb. f. Kinderh., 1909, lxx, 752.
5. Birk: Unterernährung und Längenwachstum beim neugeborenen Kinde., Berl. klin. Wchnschr., 1911, xlviii, 1227.

Let it be repeated again: Congress has no power to pass any law interfering with the practice of medicine in the states. Neither Congress nor any state legislature has any right to compel any sane adult to take any form of treatment against his will. The Owen bill does not create a single new bureau or division. It simply collects, in a single department, certain existing bureaus and divisions having functions bearing on public health. It authorizes the establishment of laboratories and the employment of scientific experts to study disease as Koch studied tuberculosis, as Carroll and Lazear and Agramonte studied yellow fever, as Stiles and Ashford studied hookworm, as Ricketts studied mountain fever, as Flexner is studying cerebrospinal meningitis.

Have any of these men interfered with personal liberty? Has not the victory over yellow fever, as the result of the work of the Army medical officers, released the entire South from the fear of epidemics, the tyranny of the shot-gun quarantine, the periodic suspension of business and the loss of millions of dollars each year? Has not the discovery of the hookworm and the possibility of removing this infection and its results, given new hope to the South of the solution of its labor problem and of its industrial development?

Has Gorgas, in the Canal Zone, trodden on the rights of any one? Yet America is building the canal, where France failed, because applied scientific knowledge is guarding the workman from disease and keeping him alive to do his work. It is about time that the American public understood that the stock objections to advanced sanitary regulations are based on ignorance and misconception of both the law and the facts. A national department of health, like our state boards of health, would be for the study and prevention of disease and the advancement of public health and not for the treatment of individual patients, or for the regulation of the practice of medicine.

Current Comment

IRRATIONAL GOVERNMENTAL DECISIONS ON SODIUM BENZOATE

Last week we referred to the much-discussed question of the use of sodium benzoate as a food preservative. While a great deal has appeared regarding the controverted question of the harmfulness or harmlessness of this chemical, but little attention has been given to the attitude of the United States government on the subject. The fact is, the ruling of the government officials on the question of the use of sodium benzoate in foodstuffs is inconsistent to a degree. They have pronounced the chemical harmless and they permit its use in unlimited quantities in foods, but—and here lies the absurdity—they insist that those manufacturers who use it shall declare on the label both the presence and the proportion of the chemical used. Why should a catsup-maker, for instance, be forced by the government to state the presence and quantity of an ingredient of

his product which the same government has officially pronounced harmless and which it permits to be used in any quantity? It is altogether unjust to rule that a manufacturer shall declare the presence and proportion of one ingredient of his product—an ingredient which the government claims to be wholesome—while the presence of any other wholesome ingredients may remain a secret. It is highly probable that if this ruling were brought up to the courts, it would be declared discriminatory and illegal. The only possible explanation for such ridiculous inconsistency is that the government officials who issued this decision knew that they had the wrong side of the controversy and that the American public was not with them. In other words, benzoate of soda is not harmless and the concession to the manufacturers called for a compensating sop to the people. So the officials "hedged" by injecting into their decision a technical restriction in the use of the chemical in foodstuffs.

THE ART OF OMISSION

Robert Louis Stevenson (himself a master of the *ars omissionis*) writes in one of his letters: "There is but one art—to omit! Oh, if I knew how to omit, I would ask no other knowledge. A man who knew how to omit would make an Iliad of a daily newspaper." When all medical writers have learned to omit the useless, the trite, the insignificant and the irrelevant, many manuscript editors will find their occupation gone; but private misfortune will pass unnoticed amid the general rejoicing. *Ars longa, vita brevis;* it takes a long while to learn to be brief; but, on the other hand, nothing will more effectively extend the average span of life than general mastery of the art of omission—in medical literature, at least.

GENEROUS BUT NOT JUST

The story of Dr. Grenfell's heroic and self-sacrificing work among the Labrador fishermen has stirred the entire English-speaking world. American physicians are as proud of him as are his English confrères, since science is international and knows no boundaries. The fact that this noble physician won an American girl as his wife has only increased the sense of pride and proprietorship which all America feels in him. Nor has our enthusiasm limited itself to applause. An American business man, Mr. George B. Cluett of New York, has donated a fine new schooner as an auxiliary to Dr. Grenfell's hospital ship. Two auxiliary yawls have been presented by American college students. Many American dollars have gone to help Dr. Grenfell in his noble work. This is right, and it is to be hoped that means for this purpose may never be lacking. Yet the amazing fact has recently become known that while America has been helping generously to provide hospital ships and surgeons for the fishermen of Newfoundland and Labrador, our own American fishermen, from Cape Ann and Gloucester and Marblehead, have been dependent for aid in time of need on the charity of a French hospital ship. It is not gratifying to our sense of pride and independence to know that at the very time we were giving with a lavish hand to our heroic neighbor on the north, our own sailors were forced to accept from a foreign vessel the aid our own country had withheld. Such neglect of our own can be due only to ignorance and surely, now that the facts are known, there will be no lack of money and men to supply this shameful lack. If Congress does not make provision for a United States hospital ship for our fishermen, private philanthropy should see to it that we no longer suffer under the charge of being unjust and neglectful of our own, at the same time that we are generous with our neighbors.

PROBABLE TAPEWORM INFECTION OF NORTHERN MICHIGAN WATERS

From information received from the State Board of Health of Michigan, which will be embodied in the next publication of that board, we learn that the attention of Dr. Warthin of the Department of Pathology of the University of Michigan has been specially called to the occurrence of the broad tapeworm (*Bothriocephalus latus*) in the mining population of northern Michigan. The large number of Finns and Swedes living in the mining towns might be expected to include cases of this infection, which is said to be very prevalent in Finland and Russia as well as other Baltic states. It also occurs in other European countries and in Japan, but up to recent years has been rarely reported in this country. Prior to 1888 but one case had been reported (by Leidy), though undoubtedly others had occurred; and a large tapeworm was certainly not unknown in Alaska in the sixties among the Russian and creole residents, which by them was attributed to the eating of salmon. Up to 1907 only thirty cases had been reported in the United States, according to Stiles in Osler's "Modern Medicine." Stiles pointed out, however, that it might very likely become more frequent in the fish in some of our lake regions, through infection from the Finnish and Swedish immigrants, and it appears from Dr. Warthin's report that this has already taken place. He finds that children who have been brought to this country as nursing infants have become infected after the age of puberty and it is improbable that they could have brought the disease with them at that tender age to develop at so late a period. One case at least is reported of a child 5 years old who had never been out of the country but who had eaten uncooked fish from Portage Lake. This is itself a sort of arm or inlet of Lake Superior which is probably also contaminated. The *Bothriocephalus* is the most formidable of the tapeworms—one of the largest, if not the largest, and most rapid in its growth—and is capable of causing serious symptoms. The danger, of course, lies in the eating of fish uncooked, but there is a large market for smoked lake whitefish and herring, which are probably often eaten without cooking, or without cooking enough to destroy the parasites. This is especially likely to occur when a new purchaser is informed that cooking is unnecessary. The report to the Michigan Board of Health concludes with a statement of the belief that the infection of the northern waters has already occurred, all the necessary conditions being present, though the larvæ have not yet been actually demonstrated in the fish or its organs. It is recommended that a thorough

investigation be made, that measures be taken to prevent the contamination of the waters by the passage of feces of infected persons through sewage, and that warning be given against eating fish — unless thoroughly cooked—which has been caught in localities where the parasite has been found. Only thorough cooking will destroy the larvæ and prevent infection. Smoking, salting and drying are insufficient. The matter is one which has more than a simple local interest, as the Lake Superior fisheries furnish a large proportion of the choicest fresh water fish used in the northern states. A general infection of Lake Superior fish could hardly be kept from spreading to the other lakes and thus greatly increasing the evil.

PATENT-MEDICINE EX-CONGRESSMAN IN THE MESHES OF THE LAW

Our readers were probably not greatly surprised at the announcement in the daily press a few days ago that ex-congressman H. M. Coudrey of Missouri had been arrested on a charge of using the mails to defraud. The alleged misuse of the mails was in connection with the business of the Continental Life Assurance Company and the International Fire Assurance Company. Coudrey's activities in the "patent-medicine" business were discussed in THE JOURNAL, March 30, 1907, p. 1121. At that time, in addition to being an insurance agent and a member of Congress, he was president of the Labordine Pharmacal Company. This company was engaged in the exploitation of about as brazen a fraud as has been perpetrated on the public and the medical profession; it claimed to have a "purely vegetable antipyretic" which was also "a purely vegetable cardiac stimulant." As the analyses made for the Council on Pharmacy and Chemistry showed, this product—Labordine—consisted largely of acetanilid. Coudrey attracted a certain amount of attention in Congress as the author, or introducer, of a number of freak bills including one relating to the Pharmacopeia which was quite generally pronounced "unintelligible," but which probably had a very definite meaning to some people. The point of immediate interest now, however, is whether there are men in the present Congress who have affiliations with such concerns as the Labordine Pharmacal Company; the debates at the coming session of Congress on the proposed, and much-needed, amendment to the Food and Drugs Act and the department of health bills will be followed with much interest from this standpoint.

CHAMLEE GOES TO CALIFORNIA?

We recently called attention to the fact that S. R. Chamlee, who, until the government interfered, conducted a cancer cure fraud in St. Louis, had opened an office in Chicago. We also noted that Chamlee was advertising for a registered physician so that he might carry on his nefarious work under the protection of the law. We learn from the secretary of the Illinois State Board of Health that as soon as the board's attention was called to the fact that Chamlee was in Chicago, inspectors were sent to investigate the concern. The quack had not yet succeeded in getting his legalized stool-pigeons—in the form of registered physicians—and offered to treat these inspectors, who, he thought, were patients, and accepted a fee therefor. The State Board of Health immediately commenced suit against him and on November 1, Chamlee was fined $100 and costs. He paid the fine and announced his intention of going to California to spend the winter. In the Chicago *Examiner*, November 5, however, we find an advertisement of Chamlee's in which the names of "Drs. Hurford and McKeon" appear. Evidently this faker has been able to find two physicians who are willing to barter their birthright of professional decency for a consideration. It now remains to be seen whether the Illinois law will permit such men to practice. Chamlee's alleged intention of going to California arouses the suspicion that possibly that state is a better haven for quacks than Illinois. It will be remembered that at the time Chamlee was convicted of fraud by the United States Government he had offices both in Los Angeles and St. Louis. We understand he is still running the Los Angeles office. It might be well for the authorities in that state to take a page out of the note-books of Illinois and Missouri. One of the most crying needs of to-day is more aggressive action on the part of state officials. The tendency has been and to a large degree, still is, to allow the federal government to shoulder the responsibility for the prosecution of such vultures as Chamlee.

Medical News

DISTRICT OF COLUMBIA

Building for Physicians.—The Professional Building is the latest innovation in the way of structures in Washington. The four-story house, formerly the home of Justice Peckham of the U. S. Supreme Court, has been remodeled and will be utilized as an office building exclusively for physicians.

ILLINOIS

New Hospital In Cairo.—Dr. Alpheus A. Bondurant has completed arrangements for the erection of a new hospital on Seventh Street, to cost about $50,000. The building will be fire-proof, with the latest ideas as to sanitation, ventilation, etc., and will contain about forty private rooms, besides four wards. It is expected to be ready to receive patients next summer.

County Antituberculosis Society Formed.—At a meeting held in Urbana, October 24, the Champaign County Association for the Prevention of Tuberculosis was organized. Hon. J. O. Cunningham, Urbana, was elected as temporary chairman, and Prof. W. W. Earnest, Champaign, temporary secretary. A committee on organization was appointed, to report in two weeks.

Deaths of the First Half-Year.—According to the reports of the State Board of Health, pneumonia was the chief cause of deaths during the six months ended July 1. The percentages of the chief death causes were as follows: pneumonia, 14.06; tuberculosis, 6.28; influenza, 2.04; typhoid fever, 1.38; measles, 1.17; diphtheria, 1.1; whooping-cough, .9, and scarlet fever, .7.

Personal.—Dr. Faith E. Spangler has been appointed junior physician at the Cook County Hospital for the Insane, Dunning.——Dr. O. W. Michael, Muncie, is reported to be seriously ill.——Dr. Watson W. Gailey, Bloomington, who was operated on for appendicitis at the Brokaw Hospital, October 26, is reported to be doing well.——Dr. Albert E. Campbell, Clinton, has been appointed sanitary inspector of the Illinois Central System. The duties of this position includes the maintenance of healthful surroundings for employees and patrons of the railroad.——Whiteside Medical Society held a special meeting at Fulton, November 9, in honor of Dr. Charles A. Griswold, Fulton, the oldest physician in the county.

Hospital Dedication.—Elaborate exercises marked the dedication of the Granite City Sisters' Hospital, October 12. The institution, which was formerly known as the City Hospital, was dedicated to the Franciscan Sisters and formal possession was taken. Patients applying for treatment in the hospital will be permitted to choose their own attendants and the institution will have no medical staff. Accommodation is provided for forty-eight patients.

State Tuberculosis Association Meeting.—The annual meeting of the Illinois State Association for the Prevention of Tuberculosis was held in Chicago, October 31, and the following officers were elected: president, Dr. William A. Evans, Chicago; vice-presidents, Drs. Tully O. Hardesty, Jacksonville, and George Thomas Palmer, Springfield; secretary, Mr. James Minnick, Chicago, and treasurer, Mr. David R. Forgan, Chicago. The association plans to secure the cooperation of the women's clubs of the state in a survey of the tuberculosis situation, and will be asked to obtain the number of deaths caused by tuberculosis during 1910; the number of cases of living tuberculosis; the number of cases needing material assistance, and the number of patients cared for at poorhouses, asylums, jails, reform schools, hospitals and sanatoriums. Dr. St. Elmo M. Sala, Rock Island, was elected a member of the Central Council.

Chicago

Statue to Dr. Senn.—At a meeting of the Senn Club, October 31, plans were extended for a bronze statue to the memory of Dr. Senn, to be placed in Lincoln Park. The statue is to cost $25,000, and the funds for this purpose are to be sought by subscriptions from physicians.

Additional Appropriation for Health Department Needed.—Health Commissioner Young has asked an increase in the appropriation of $180,000 for payroll and expansion purposes. The board intends to create a board of control to take charge of the city hospitals and lodging-houses, and the proper licensing and inspection of hospitals.

IOWA

New Medical Association.—A medical association has been organized in Decorah, which includes the physicians of the counties of Allamakee, Winneshiek, Howard, Chickasaw, Fayette and Clayton, and the following officers have been elected: president, Dr. Philo M. Jewell, Decorah; vice-president, Dr. E. W. Johnston, Alta Vista, and secretary-treasurer, Dr. William C. Hess, Cresco.

Personal.—Dr. Harry E. Kirschner, for four years superintendent of the State Sanatorium for the treatment of tuberculosis, Oakdale, has resigned, and will remove to California. ——Dr. Edward Hornibrook, Cherokee, was the guest of honor at a banquet in Cherokee, October 30, on the occasion of the fiftieth anniversary of his entrance into practice. A testimonial, engrossed on parchment, and setting forth that Dr. Hornibrook had well and faithfully performed his duties to the sick and afflicted for fifty years, and signed by all the members of the Cherokee County Medical Society, was presented to Dr. Hornibrook.——Drs. Thomas F. Duhigg, Archelaus G. Field, Lewis Schooler and James W. Osborn, all of Des Moines, have been appointed a committee to write the history of the Polk County Medical Society.——Dr. Wilton W. McCarthy, Des Moines, was obliged to undergo enucleation of an eye, as the result of a burn from a cinder two weeks previously.

KENTUCKY

Out-Door School to be Established.—The Board of Education of Louisville is planning to establish an out-door school for anemic and debilitated children, and Dr. James W. Guest has offered a site on which a building for this purpose may be erected.

State Society Officers.—The list of officers of the Kentucky State Medical Association, which appeared in THE JOURNAL of last week, was incomplete as regards the president and president-elect. It should have read: president, Dr. James Givens Carpenter, Stanford; president-elect, Dr. David O. Hancock, Henderson.

Tuberculosis Tax.—A contract has been made between the city of Louisville, by its general council, and the board of trustees of the Tuberculosis Hospital, whereby the board agrees to care for all the tuberculosis patients of the city. The city is to raise money for defraying the necessary expenses by a tax not to exceed 2 cents on each $100. Heretofore the city has made an appropriation each year and has cared for the patients at the City Hospital, but a law was passed by the last legislature authorizing the city to raise money by taxation for this purpose

Health Exhibit Car.—The free traveling health exhibit car of the Kentucky Association for the Study and Prevention of Tuberculosis left November 4 for a trip through the extreme eastern portion of the state. The trip will occupy twenty-one days and the car will visit twenty cities and fourteen counties. In each city visited lectures on tuberculosis will be given and a Christmas seal committee organized, to take charge of the holiday work of the association.

MARYLAND

Baltimore

Personal.—Drs. William H. Pannebaker and J. George Schmetzer, who have been ill with typhoid fever, have recovered.——Dr. and Mrs. Henry O. Reik and Dr. A. J. Neilson have returned from Europe.

Hospital Association Organized.—A hospital association has been organized by the citizens of Highlandtown and Canton for the purpose of establishing a hospital for these suburbs. The capital stock is $30,000.

Medical Inspection of Public Schools.—The health department announces that the medical inspection of the public schools will commence next week. The inspection of the parochial schools, which commenced October 1, is almost finished.

MASSACHUSETTS

Surgical Instructors Resign.—It is announced in the daily press that Dr. David D. Scannell, chief surgeon at the Boston City Hospital has resigned as professor of surgery in Tufts College of Medicine, Boston, and that every instructor in the surgical department of the school has also resigned, as a protest against what they term a gross slight inflicted on Dr. Scannell.

Septic Sore Throat.—At the meeting of the Suffolk District Medical Society, October 28, Prof. C. E. A. Winslow of New York who has made a most careful study of the epidemic which was so serious in Boston, Brookline and Cambridge last May, asserted that it was a disease new in this part of the world. It is of frequent occurrence in England and is named by him "septic sore throat." This epidemic apparently started in Hudson, Marlboro and Southboro and was almost certainly conveyed to Boston by the milk-supply. The experts who spoke at the meeting were agreed that the only safeguard against other outbreaks is in the pasteurization of the milk. The mortality of the epidemic studied reached more than fifty, largely among old people.

MICHIGAN

Medallion Presented.—At the meeting of the Wayne County Medical Society, October 21, Frank Buttrick presented to the society a medallion of the late Dr. David Osborne Farrand, a member of the society, who died in 1883.

Physicians Adopt Auto-Shield.—A shield with a background of bright red and the cross of St. George deeply outlined in black in the center, was the device adopted by the Wayne County Medical Society, October 30, as a distinguishing mark for physicians' automobiles. In the center of the cross appears the registered number of the physician.

Personal.—D. E. McClure, Muskegon, has been appointed deputy superintendent of the State Board of Health, vice Dr. E. L. Ward, resigned.——Physicians of Grand Rapids gave a banquet, October 26, in honor of Dr. Joseph Bascom Griswold, who has been a practitioner of Grand Rapids for forty years. Dr. Eugene Boise presided as toastmaster.——Drs. Frank W. Garber and George L. Le Fevre, Muskegon, have returned from Europe.——Dr. Victor C. Vaughan, Ann Arbor, has returned after a summer spent in Germany.——Drs. William A. Lemire, Michael P. Fenelon and Arthur S. Kitchen, all of Escanaba, have been elected official physicians of the Delta County Hospital and county physicians.——Dr. Abraham Goodfellow, Clio, suffered a cerebral hemorrhage, October 8.

MINNESOTA

Personal.—Dr. Robert Retzer has been appointed assistant professor of anatomy in the University of Chicago.——Dr. William Frisbie Lewis, Mankato, celebrated his eighty-second birthday anniversary at his home in Palo Alto, Cal.

Appropriations for Sanatorium.—The commissioners of Otter Tail County have appointed a committee to ascertain the cost, prepare plans and select a site for a county tuberculosis sanatorium, for which from $6,000 to $10,000 is to be appropriated.

Physicians' Building.—The Lowry Building, Minneapolis, a thirteen-story structure, providing for twenty-four office sections on each floor, is practically completed and tenants are already beginning to move in. The building is designed entirely for the use of physicians and dentists.

Society Meeting.—At the annual meeting of the Mower County Medical Association held in Austin, October 11, Dr. Ernest V. Smith, Adams, was elected president; Dr. G. M. Frank Rogers, Austin, vice-president; Dr. Peter T. Torkelson, Lyle, secretary; Dr. George J. Schottler, Dexter, treasurer, and Dr. Ralph S. Mitchell, Grand Meadow, delegate to the state association.

NEBRASKA

Typhoid Epidemic in Lincoln.—On account of the prevalence of typhoid fever in Lincoln, the local health authorities have requested aid from Washington and Passed Assistant Surgeon Leslie L. Lumsden, U. S. P. H. and M.-H. Service, who was detailed to go to Lincoln and make investigation into the epidemic and its causation, is now there conducting the investigation.

Personal.—Dr. Abraham T. Hubbell, Wood River, who has been seriously ill with erysipelas, is convalescent.——Dr. John B. Lichtenwallner, Dunbar, was given a farewell banquet, October 27, on the occasion of his leaving to settle in Omaha.

Republican Valley Physicians Meet.—The annual meeting of the Republican Valley Medical Association was held at Alma, October 26. The society decided to hold its next meeting in Holdrege in May, 1912, elected Dr. Robert S. Mitchell, Red Cloud, president, and Dr. Henry Farrell, Axtell, vice-president, and reelected Dr. Joseph N. Campbell, Stamford, secretary, and Dr. William D. Shields, Holdrege, treasurer.

NEW YORK

Hospital to be Sold.—Hempstead Hospital, Mineola, L. I., is to be sold at auction in order to satisfy claims against the institution.

Approves Tuberculosis Hospital.—The state authorities have approved the application of the Civic League of Ossining to establish a tuberculosis hospital.

Personal.—Dr. James J. Grady, Elmhurst, has resigned to take charge of a hospital for a copper mining company in Peru, South America.——Dr. Thomas Ordway, Albany, was given an impromptu dinner by the faculty of the Albany Medical college and other friends, October 17. Dr. Ordway has been connected with the Bender Laboratory for about twenty years, but is soon to become director of the cancer research laboratory of Harvard University.——Dr. Edward F. Hurd has been elected president of the Freeport Board of Health.

New York City

Lowest City Death-Rate.—The lowest death-rate since the formation of the Greater New York in 1898 was reported for the week ended October 28, the rate for this week being 12.12 per 1,000 population, while the rate for the corresponding week of 1910 was 13.53.

New Laboratory Building.—Roosevelt Hospital has had a laboratory under an endowment given by Mrs. E. H. Harriman for the past two years. Recently Dr. Lewis R. Morris offered to erect a suitable building for laboratory work and such a building will be erected in the center of the Roosevelt Hospital premises. Dr. William Gordon Lyle is to have charge of the new institution.

New York Academy of Medicine Committee on Hospital and Municipal Budget.—This committee was formed by the two committees created by act of council and appointment by the president. The work of this reorganized committee has been the investigation in this city of hospital conditions. It is to keep the profession informed in regard to hospital needs, organization and progress, and cooperate with the library in securing hospital literature; it is also to investigate the conditions and needs of those departments of the city which control the public hospitals, viz., the health department, the charities department and the Bellevue and Allied Hospitals, so that the committee can, with proper data, appear before the city authorities and aid in securing needed or opposing unwise appropriations, increasing the efficiency of the city's hospitals. All this is to be done on condition that such investigation and help were desired. The committee reported that if its paid executive committee were continued, it could and ought to assume the work of a council on hygiene, or a committee on public health, and asked for an enlargement of its activities. The council voted to grant the committee the enlarged powers which it asked. Dr. Charles L. Dana is chairman of the committee and Dr. James Alexander Miller, secretary.

OHIO

Loving Library Given to Academy.—By the will of the late Dr. Starling Loving, Columbus, his medical library is bequeathed to the Columbus Academy of Medicine.

Physicians' Buildings.—Plans have been drawn for two buildings in Columbus, to be used entirely for physicians' offices. The one will contain accommodation for twenty-four and the other for twelve physicians.

Conference of Health Officers.—At the thirty-first conference of the State Board of Health with representatives of the local boards of health, in the southern district of Ohio, held in Cincinnati, October 19 and 20, questions of quarantine, disinfection, prevention of tuberculosis, sexual hygiene, and other subjects of vital interest to sanitarians were discussed.

The Fight Against Tuberculosis.—The Cleveland School Board, the Antituberculosis League, the Federation of Women's Clubs, Fresh Air Camp Association, and the Board of Health, held a conference, October 26, and agreed to combine in the movement to stamp out tuberculosis from the schools and to conduct and extend the work now being done in open-air schools.

Physicians Ill or Injured.—Dr. Rufus D. Jacobs, Vinton, fell from a Hocking Valley train near that place, October 28, and had both legs cut off.——Dr. Thomas A. Weaver, Orrville, is reported to be ill with typhoid fever.——Dr. Robert D. Gibson, Youngstown, who was injured in an automobile accident near Canton, in September, was brought to Youngstown, October 25. He is reported to be improving.——Dr. Charles A. Dunn, Stovertown, suffered a cerebral hemorrhage, October 7.——Dr. Henry H. Havens, Tippecanoe City, was seriously injured in an automobile accident, October 8.——Dr. Edward H. Porter, Tiffin, was operated on for appendicitis, October 11.

Personal.—Dr. Allen A. Taylor, Toledo, has gone to Florida, where he expects to make his home.——Dr. John D. O'Brien, Massillon, has resigned as head of the Strongsville Sanatorium, and will practice in Canton.——Dr. Corydon O. Beardsley, Ottawa, has been appointed surgeon to the local pension examining board, vice Dr. Alva L. Paul, deceased.——Dr. George H. Wilson, Painesville, has been appointed chief surgeon in the Consolidated Coal Company, Cumberland, Md. ——Dr. Edson C. Brown has resigned as chief of the medical staff of the Massillon State Hospital and will practice in Mansfield.——Dr. Herbert M. Platter and family, Columbus, have returned from Europe.

Cincinnati

Academy of Medicine Entertains Druggists.—The Cincinnati Academy of Medicine at its meeting, October 30, entertained the Ohio Valley Druggists' Association and the Hamilton County Medical Society. The questions discussed at the joint meeting were such as would advance the cause of legitimate pharmacy.

Open-Air Schools Ready.—The two open-air schools—one for anemic and the other for tuberculous children—were opened October 30. The school for anemics is located at the First Intermediate school and has an initial attendance of about sixty; the school for tuberculous children is located at the Branch Hospital and commenced with twenty children in attendance.

Personal.—Dr. and Mrs. Christian R. Holmes have returned from Europe.——Drs. William Gillespie and Otto V. Huffman have been appointed members of the junior staff of the Cincinnati City Hospital on the gynecological and obstetrical service, vice Dr. Robert Thomas, resigned.——Dr. Charles A. Stammel has been appointed resident physician at the Industrial School for Boys, Lancaster, vice Dr. Julius G. Stammel, resigned.——Dr. Samuel S. Tomlinson, on his own request, is said to have been committed to the Longview State Hospital, October 19.

PENNSYLVANIA

Progress on State Sanatorium.—The dining hall of the largest of the buildings of the sanatorium at the Summit, Cresson, will be ready for occupancy, November 15. The east ward will be finished a few days later and the remainder of the buildings will, it is said, be completed by January 1.

Personal.—Dr. and Mrs. Carlisle E. McKee, Braddock, sailed for Europe, October 23.——Dr. John C. Hoye, Newcastle, was attacked by robbers in New York City, November 2, and sustained a severe fracture of the skull.——Dr. Samuel H. Gilliland, Harrisburg, has been appointed director of the state department of health laboratories.——Dr. Maurice E. Heck has resigned as intern in the Harrisburg Hospital and will

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locate in Florida.——Dr. William C. Le Compte has succeeded Dr. William Martin as local surgeon of the Pennsylvania System at Bristol.

Tuberculosis Exhibit at Pittsburgh.—The Tuberculosis League of Pittsburgh had an exhibit at the recent Industrial Exposition in that city illustrating preventive measures in human and bovine tuberculosis and infant mortality. During the seven weeks that the exposition was open, the booth was visited by 70,000 people.

Censorial District Meeting.—The eighth annual meeting of the Seventeenth Censorial District of the Medical Society of the State of Pennsylvania, including Montour, Snyder, Northumberland and Columbia counties, was held at Selins Grove, September 8. Danville was chosen as the next place of meeting and Dr. John B. Cressinger, of Sunbury, was elected president, and Dr. Luther B. Kline, of Catawissa, secretary. Resolutions were adopted heartily endorsing and supporting Dr. Harvey W. Wiley in his honest and heroic efforts impartially to enforce the Pure Food and Drugs Act.

Philadelphia

Weir Mitchell Lectures.—The fourth of the Weir Mitchell Lectures of the College of Physicians was delivered November 3, by Dr. William T. Porter of the Harvard Medical School on "Shock."

Alumni Dinner.—The Philadelphia Alumni of the medical department of the University of Pennsylvania will hold their annual banquet, November 18. Among the guests will be the new members of the medical staff of the university.

Solarium for Hospital.—Through the executors of the estate of Mrs. Catharine C. Middleton, $10,000 has been given to the Jefferson Medical College Hospital for the erection of a solarium for children in memory of Samuel W. Middleton.

Gift of Hospital.—At the golden jubilee celebration of the John Wanamaker Store, held in the store, October 28, the site of John Wanamaker's birthplace in the southern part of the city, which the 6,050 employees had purchased, was presented to him. Mr. Wanamaker announced that he would place this property, together with ground in the neighborhood which he would purchase, in trust with three trustees from different departments of the store, and would thereon erect a great hospital for suffering children, to be called the Robert C. Ogden Hospital, after a former partner.

Personal.—Dr. Herman A. Brav announces that he has given up the practice of general medicine and will henceforth confine his work to the treatment of diseases of the rectum.——Dr. W. W. Cadbury, dean and professor of medicine and pathology in the University Medical School, Canton, China, was the guest of honor at a banquet, held in Houston Hall, October 30.——Dr. Joseph S. Neff has resigned as president of the Philadelphia Housing Commission and has been succeeded by Mr. George W. Norris.——Dr. Charles E. Treibley has been appointed physician at the Carlisle Indian School.——Dr. Elliston J. Morris fractured his left arm in an automobile accident, near Egg Harbor, October 8.——Dr. Richard H. Harte has returned from Europe.

Larger Force Needed for Health Department.—The department of Public Health and Charities has been greatly handicapped by inadequate staffs and Dr. Joseph S. Neff, the director of the department, has asked city councils for additional assistance. Dr. Neff plans the reorganization of the nuisance inspection division, divorcing it entirely from the tenement house division. B. J. Newman, secretary of the Philadelphia Housing Commission, in endorsing Dr. Neff's request for additional sanitary and nuisance inspection, said that not a single actual inspection of conditions in houses already built and occupied has been made this year, owing to the necessity of putting inspectors and fumigators at clerical work in the offices of the department. Dr. Neff hopes that the staff of visiting nurses will be increased to forty. Eight are on the staff now, but their work is confined to a restricted territory.

VIRGINIA

Meeting of State Society.—The forty-second annual meeting of the Medical Society of Virginia was held in Richmond, October 24-27, under the presidency of Dr. Otho C. Wright, Jarratt. The society took official cognizance of the Carrington-Mann question by adopting a resolution "That it is the sense of the Medical Society of Virginia that the state lost a most valuable and capable officer when Dr. Charles V. Carrington, Richmond, was not reelected surgeon of the state penitentiary." The following officers were elected: president, Dr. Hugh M. Taylor, Richmond; vice-presidents, Drs. Samuel Lile, Lynchburg; Joseph Grice, Portsmouth, and Samuel B. Moore, Alexandria; secretary, Dr. Paulus A. Irving, Richmond (reelected); treasurer, Dr. Greer Baughman, Richmond (reelected); councilors, Drs. Alfred L. Gray and Charles V. Carrington, both of Richmond; and delegates to the American Medical Association, Drs. William E. Anderson, Farmville, and John Staige Davis, Charlottesville. Norfolk was selected as the next place of meeting.

Control of Communicable Diseases.—A committee from the Norfolk Medical Society, composed of Drs. Lomax Gwathmey, Lawrence T. Royster, Herbert Old, William L. Harris, Charles R. Grandy and Beverly R. Kennon, have recommended concerning the extension and enforcement of health ordinances: that a medical inspector be employed by the health department, and that a hospital for contagious diseases, aside from smallpox, be at once provided.

Public Health Officers Meet.—The Virginia Public Health Association, at its meeting in Richmond, October 26, elected the following officers: president, Dr. Ernest C. Levy, Richmond; vice-presidents, Drs. Powhatan S. Schenck, Norfolk, and Jesse M. Shackelford, Martinsville; secretary-treasurer, Dr. Lucien Lofton, Emporia; and delegates to the Public Health Association, Drs. Ernest C. Levy, Richmond, Powhatan S. Schenck, Norfolk, and Allen W. Freeman, Richmond.

WASHINGTON

Personal.—The Spokane Medical Association has appointed the following staff for the new tuberculosis sanatorium: Drs. Frank Hinman, Henry Power, Arthur E. Johnson, Alexander R. Lundgren, Herman P. Marshall and A. P. Tilmont. Drs. Ronald A. Greene and William S. Frost were also appointed consultants in complications of the eye, ear and throat.——Dr. James E. Crichton has been appointed a member of the commission to investigate and report on tuberculosis in Seattle.——Dr. Xenophon L. Anthony, Spokane, who was operated on in the Sacred Heart Hospital, October 21, for appendicitis, is reported convalescent.——Dr. A. E. Stuht, Colfax, has resigned as city health officer.——Dr. Fred R. Hedges, Everett, who was operated on for appendicitis at the New Providence Hospital, Seattle, is reported convalescent.——Dr. Elmer E. Heg, Seattle, state health commissioner and secretary of the State Board of Health, has resigned on account of the ill health of his wife.

WEST VIRGINIA

State Association Meeting.—At the annual meeting of the West Virginia State Medical Association held in White Sulphur Springs, the following officers were elected: president, Dr. Charles O. Henry, Fairmont; vice-presidents, Drs. Richard E. Venning, Charlestown; Charles O'Grady, Charleston, and W. Hoddis Daniels, Elkins; secretary, Dr. Arthur P. Butt, Davis (reelected); treasurer, Dr. Hugh G. Nicholson, Charleston; councilors, first district, Dr. Henry R. Johnson, Fairmont; second district, Dr. Richard H. Edmundson, Morgantown; third district, Dr. Benjamin B. Wheeler, McKendrie; fourth district, Dr. George D. Jeffers, Parkersburg; fifth district, Dr. Joseph E. Rader, Huntington; delegates to the American Medical Association, Drs. Peter A. Haley, Charleston, and Frank L. Hupp, Wheeling; and alternates, Drs. Vincent T. Churchman, Charleston, and Charles A. Wingerter, Wheeling. Webster Springs was selected as the next place of meeting.

WISCONSIN

Antitoxin Distributed.—During the two years since free distribution of diphtheria antitoxin to the poor of the state has been made, 4,297 packages of antitoxin have been distributed.

Ill and Injured.—Dr. Charles E. Hildreth, Lena, Ill., who has been ill in Milwaukee for several weeks, has recovered and resumed practice.——Dr. William T. Rinehart, Ashland, is reported to be in critical condition following an abdominal section.

Waukesha Wants Hospital.—A formal appeal has been made to the city council by the physicians of Waukesha to take up and aid the project for a city hospital, for which a fund of $5,000 was subscribed several months ago through the efforts of the local medical society.

Personal.—Dr. E. Baumgartner has been appointed instructor in anatomy in the University of Wisconsin.——The board of trustees of the Milwaukee County poor have reelected the following officers: Dr. Albert F. Young, county physician, and Dr. Louis F. Klemm in charge of the west side; Dr. William F. Lochemes, south side; Dr. Charles A. Fidler, Cudahy; Dr. John H. Rohr, North Milwaukee, and Dr. T. P.

Grogan, West Allis.——Dr. and Mrs. Andres G. Hovde, Superior, sailed for Europe, October 28.——Dr. Richard E. Davies has succeeded Dr. W. B. Strong as health commissioner of Waukesha.——Dr. David Lloyd Williams, Milwaukee, has been appointed assistant surgeon at the National Volunteer Soldiers' Home, Danville, Ill.——Dr. Max Staehle has been elected president of the State Agricultural Society.——Dr. Sara I. Morris has been appointed medical adviser of women at the University of Wisconsin, vice Dr. J. Helen Dobson, resigned.——Dr. Thomas Fitzgibbons, Milwaukee, has returned from abroad.——Dr. Maurice D. Bird, Marinette, has succeeded Dr. William R. Bell as physician of Marinette County.

GENERAL

Railway Surgeons to Meet.—The twenty-first annual meeting of the New York and New England Association of Railway Surgeons will be held at Hotel Astor, New York City, November 16 and 17, under the presidency of Dr. Frederick A. Goodwin, Binghamton, N. Y.

Militia Men Must Pay for Typhoid Vaccination.—So many applications have been received by the War Department from national guard organizations for the supply of antityphoid serum, that it has been found necessary to abandon its free issue. A circular has been issued informing the guardsmen that hereafter they can obtain the serum at its cash value, approximately 12½ cents for each inoculation, the amount to be charged against the federal allotment of the state for the support of the militia.

Ultraviolet Rays to Purify Water.—Army surgeons in the Philippine Islands report that they have been making successful experiments with a plant consisting of a small dynamo and gasoline engine, carried in the ordinary escort wagon with troops, which has shown itself capable, by the generation of ultraviolet rays, of completely purifying foul water so as to serve daily a quart of sweet drinking water to every man in the regiment. The ultraviolet rays are said to destroy, not only the animal parasites in the water, but also bacteria.

Personal.—Lieutenant-Colonel Jefferson R. Kean, M.C., U. S. Army, has been detailed as a delegate to the International conference to be opened in Paris, November 7, and also to the meeting of the American Public Health Association in Havana, December 4-9.——Surgeon Rupert Blue and Assistant Surgeon George W. McCoy, U. S. P. H. and M.-H. Service, sailed from San Francisco, November 4, for Honolulu, Hawaii, Dr. Blue to preside over the quarantine station, and Dr. McCoy to assume command of the leprosy investigation station on the Island of Molokai.——Dr. Aristides Agramonte, Havana, sailed from New York for Holland, October 31.

Plague and Yellow Fever.—The *Canal Record*, October 25, reports a death at Ancon Hospital, October 17, from bubonic plague. The victim was a mechanic who left Ecuador, October 7, arriving in Panama four days later and was taken to the Ancon Hospital two days after his arrival. There is no probability of the disease spreading from this case.——Out of 75,000 rats killed and examined by the Seattle Health Department during the last fifteen months, only one was found to be infected with bubonic plague.——A case of yellow fever is reported from Honolulu. The patient was a Hawaiian and believed to have become infected from a Japanese steamer, which recently arrived in Honolulu from Central America.

Cooperation in the Administration of the Food and Drugs Act.—At the last meeting of the Association of State and National Food and Drug Departments at Duluth, Minn., the president, Lucius P. Brown, Nashville, Tenn., was instructed to appoint a committee to perfect plans for cooperation among state officials and national governments in the administration of the Food and Drugs Act. A committee was accordingly appointed, consisting of Dr. Samuel J. Crumbine, Topeka, Kan., for a five-year term; R. M. Allen, Kentucky, for a four-year term; R. V. Fitzrandolph, New Jersey, for a three-year term; L. Davies, Washington, for a two-year term, and Dr. A. N. Cook, South Dakota, for a one-year term. In accordance with the resolutions adopted at this convention that a committee be appointed to study the subject of cold storage and draft a measure incorporating in its provisions just and reasonable regulations for the operation of cold storage warehouses and the storage of foodstuffs therein, the president appointed a committee consisting of H. E. Barnard, Indianapolis; R. B. Fitzrandolph, Trenton, N. J.; Miss Mary E. Pennington, of the Department of Agriculture, Washington; M. E. Jaffa, Berkeley, Cal., and Hon. W. B. Barney, Des Moines, Ia. The officers have announced their desire to make the organization's influence felt as a factor in the enforcement of food laws and that they stand with Dr. Wiley for this platform.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Oct. 28, 1911.

The Effects of the Great Railway Strike on the Public Health

The great railway strike which paralyzed traffic for some days on most of the lines in this country has been mentioned in a previous letter. Its detrimental effect on the public health of one of our greatest cities can now be estimated. Before the strike Liverpool, with an estimated population of 747,000, showed in recent years, in consequence of improved sanitation, great improvement in the death-rate from summer diarrhea in infants. During the past summer the rate has been extraordinarily low. During the five years, 1906-10, the average temperature in July was 58.9 F.; the average deaths from diarrhea in the four weeks of the month, 4, 6, 9 and 11, and the general death-rate for each week was 15 per thousand of the population. For the four weeks in August the average temperature was 59.5 F. and the deaths from diarrhea were 23, 34, 52 and 63, and the general death-rate 19. In the present year the average temperature was 64.1 F. and the average deaths from diarrhea 20, 23, 38 and 46, and the general death-rate ranged from 15 to 18. In August the average temperature was 68.8 F. and hardly any rain fell. This probably accounts for the fact that there were eighty-one deaths from diarrhea during the first week and that the general death-rate rose to 20. On August 5, strike troubles began and they reached their acme on the 17th. The sanitary service was interrupted, garbage accumulated, and the food-supply was seriously diminished. The consequences are shown by the statistics. For the second week in August there were 132 deaths from diarrhea and the general death-rate rose to 24 per thousand of the population. During the third week there were 159 deaths from diarrhea and the general death-rate was 27. With the restoration of the sanitary service the figures fell but remained high during September, when the deaths from diarrhea in the four weeks were 148, 130, 109 and 112. During the strike 300 butchers' shops were closed because they could not obtain meat and the interruption of the milk-supply had an immediate effect on infants. Even the hospitals suffered, although the strike committee endeavored to secure for them delivery of supplies.

The National Insurance Bill

The contest between the profession and the friendly societies on the national insurance bill continues. Mr. Lloyd-George, the chancellor of the exchequer, who has always shown great skill in assuaging quarrels and harmonizing conflicting interests, arranged a conference between six representatives of the British Medical Association and representatives of the friendly societies, at which he presided. The proceedings lasted two and one-half hours and an understanding was arrived at that they were to be kept private but the following has transpired: The societies objected to the fixing of the income limit by the health committee (described in a previous letter to THE JOURNAL). They asked for the right to form local medical associations, such as already exist in certain towns, and asked for an assurance that the medical profession would not endeavor to ostracize the doctors engaged by such associations. They also asked that insured persons should be entitled to have the personal attendance of the doctor desired and not be forced to accept the services of his assistant. The representatives of the British Medical Association stated that they had no authority to enter into an arrangement of any kind and that they could hold out no hopes of departure from the six cardinal points of policy declared (described previously in THE JOURNAL). Many members of the profession disapprove of taking part in the conference.

The Medical Equipment of Merchant Ships

A committee appointed by the board of trade, at the request of the General Shipowners' Society of London to consider the medical scales for merchant ships, has recommended four revised scales in place of those now in use. For ships which will carry a medical officer, including emigrant ships, two scales are recommended—one for the North Atlantic, where voyages are short and the numbers of passengers and crew large; the other for ships with fewer passengers which go on longer voyages. For each of these classes a list of the necessary instruments, including a sterilizer large enough to take a long midwifery forceps, is given. A microscope and bacteriologic outfit, such as are required in the larger vessels of some foreign countries, have not been recommended. The instrument and appliances for clinical work have been modernized. The appointment of a second medical officer to ships

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carrying a crew and passengers amounting to 1,500 is recommended, as well as a dispenser. The other two scales are for vessels which do not carry a medical officer and for fishing boats. One scale applies to ships whose voyages ordinarily last more than five days; the other, named an emergency scale, is for vessels never more than five days away from harbor, and applies to all sea-going ships; but coasting craft, whose voyages last no more than twenty-four hours, may conform to the emergency scale or carry the ambulance hamper of the St. John Ambulance Association. Antidiphtheritic serum, sealed and dated, is to be carried by all emigrant ships. The need for separate and reserved accommodation in cargo vessels for men who may become ill or injured is pointed out.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Oct. 20,1911.

Dedication of a Monument to Michael Servetus

A monument, the third in France, was dedicated on October 15, to the memory of Michael Servetus at Vienne, department of l'Isère. Servetus is shown at the stake in the midst of flames, chained to a stone, his book bound to his side. In this book entitled, *Christianismi restitutio*, Servetus described for the first time the lesser circulation of the blood. Dr. Charles Richet, professor of physiology at the Faculté de médecine de Paris, who represented the University of Paris at the ceremony, said that the divination of the pulmonary circulation by Servetus, who, unlike Harvey, had done no vivisection, and who, unlike Vesalius, had done no dissection, was unparalleled —almost a miracle. The contemporaries of Servetus did not understand him and his discovery remained unknown. Seventy-five years had to pass before Harvey gave it a rigorous demonstration and forced recognition.

The Catastrophe of the "Liberté" and Microbes

The causes of the terrible catastrophe which destroyed the "Liberté," one of the finest vessels of our navy, are not yet established. Among the opinions of various specialists it is interesting to mention one, according to which the gun-cotton, technically known as powder B, should be considered, not only from the chemical but from the microbiologic point of view. For the chemist, the nitrification of cotton consists in making it an explosive; for the microbiologist, it is sterilizing it. If the nitrification of the cotton is incomplete, this is unimportant from the chemist's point of view, for the explosive still exists, while the microbiologist sees in the parts not nitrified a developing culture of microbes. In fact, powder B does not preserve its qualities indefinitely; it grows old; its homogenous and translucent aspect is darkened by spots which become concave and finally give forth oily exudations. These are the manifestations of the activity of certain anaerobic microbes which produce a series of gaseous bodies whose presence in air-tight receptacles may finally cause the explosion of the powder.

Sterilization of Water by Ultraviolet Rays

Drinking-water for Paris is ordinarily supplied from four derivations of spring-water, which are supplemented, when necessary, by filtered river-water. Lately the filtered waters have been treated sometimes by ozone, sometimes by ultraviolet rays. These experiments permit a comparison of the two procedures. The bactericidal action of ultraviolet rays is very powerful. To separate the ultraviolet rays from the red, green and yellow ones, the mercury-vapor lamp in transparent quartz, intended for illumination, was employed. The system devised by MM. Victor Henri, Max de Recklinghausen and André Helbronner is remarkably simple, requiring no complicated machinery. A slight electric current accomplishes the work, which is hygienically thorough. If the electric current is accidentally interrupted, an automatic sluice opens the conduit and empties the water which has not undergone sterilizing action. The operation of this apparatus is economical, as was shown in the results of a competition held last year by the city of Marseilles.

Death of M. Alfred Binet

Psychologic science has just experienced a great loss in the person of M. Alfred Binet, *docteur ès sciences*, director of the laboratories of physiologic psychology at the Hautes Etudes à la Sorbonne, who has died, aged 54. He was the author of numerous works on psychology, including "Alterations of the Personality," "The Soul and the Body," "The Revelations of Handwriting," etc. Binet gave this science a direction altogether personal and original with himself. He founded the *Année psychologique*. He took especial interest in pedagogical questions and recently published a book entitled, "Modern Ideas in Regard to Children." He was the president of the Société pour l'étude psychologique de l'enfant.

The Assassin of Dr. Guinard

Herrero, the assassin of Dr. Guinard, committed suicide recently in prison. He had previously made two unsuccessful attempts at suicide.

Death of Prof. Antoine Blatin

Dr. Antoine Blatin, former professor of physiology at the Ecole de médecine de Clermont, has just died, aged 72.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Oct. 19, 1911.

Personal

The Breslau anatomist, Professor Hasse, celebrated his 70th birthday, October 17. He has been regular professor in Breslau since 1873.

Professor M. Hahn of Munich has received a call to Königsberg as director of the hygienic institute.

Professor Kehrer of Bern, the son of the well-known gynecologist of Heidelberg, has been called to the directorship of the gynecologic clinic at Dresden, as successor of Professor Leopold. As Kehrer's successor there have been proposed Professor Baisch of Munich and Professor H. W. Freund of Strasburg.

Foundation for the German Society for the Advancement of Science

The Gesellschaft deutscher Naturforscher und Aerzte has just received an endowment, the Adelaide Bleichroeder fund of $25,000 (100,000 marks). The foundation is for the assistance of scientific work in the field of medicine, including the ancillary sciences. As the entire fund is to be distributed in thirty years, an annual sum of about $1,500 (6,000 marks) will be available. Among the competitors, those who have no official posts or are not connected with well endowed institutions shall be preferred.

German Institute for Foreigners

Following the suggestion of the deceased Althoff, a German institution for foreigners, like the institution in Göttingen which I have previously told you about, has been founded in Berlin, with means provided by privy councilor Böttinger. The purpose of the institution is to furnish educated foreigners who are residing temporarily in Berlin an intellectual headquarters for their studies and an introduction to the study of German civilization. In addition courses in speaking German and introductory lectures on German literature and art have been provided. Visits to the art treasures of Berlin and excursions to other seats of culture in Germany will be made. The bureau is located at 8 University Street, Berlin, and is open to foreigners daily from 2 to 4 p. m.

Collective Investigation of Round Ulcer of the Stomach

A number of Bavarian university teachers and physicians have instituted a collective investigation of the etiology and clinical course of ulcer of the stomach. The request is made that material from operations and necropsies be sent to the pathologic institute in Erlangen with a filled out question blank giving the clinical data of the operated cases of those controlled by section. The anatomic material is to be examined by Professors Hauser and Merckel, the clinical by v. Angerer, v. Bauer, Borst, Crämer, Enderlen, Graser, v. Leube, F. V. Müller and Penzoldt. Question blanks and further information can be obtained from Prof. Hauser of Erlangen, Prof. N. Merckel of Erlangen and court councilor (Hofrat) Cramer of Munich.

Spitting in Railroad Cars

While spitting is forbidden in the street cars of Berlin and other places and in foreign railway cars, such a prohibition has not yet been made on the German railroads. At the request of the management of the railroads, the scientific deputation for medical affairs made an expert report regarding the necessity of such a prohibition. The results of the investigation undertaken by the former hygienist of Graz, Professor Prausnitz, and Petri, a member of the imperial health office, on the rail-

way cars which run between Berlin and Meran and are patronized by many consumptives, showed that there is no regular or even frequent presence of tubercle bacilli, capable of causing infection, in the dust of railway cars. Furthermore the investigations of Flügge have shown that the danger from the inhalation of dried sputum is not very great, and is far less important than the danger from the so-called droplet infection. Still the scientific deputation holds that spitting on the floor and the possibility of soiling it in this way with tubercle bacilli should by all means be prevented. The instruction of the public by warning notices is thoroughly justified as the evil produced by spitting in a confined space is very great. It should also be required that the employees of the company enforce the regulations against travelers who transgress them. In this respect the measures in force in many localities, especially on foreign roads, leave much to be desired. For instance in the Italian railway cars the floor is soiled with spitting since expectoration has been prohibited as much as before the regulations against this were adopted.

VIENNA LETTER

(From Our Regular Correspondent)

VIENNA, Oct. 24, 1911.

Opening of the Radium Institute of Joachimsthal

At Joachimsthal, a Bohemian mining place, the government has erected an institute which is to be devoted entirely to the use of radio-active substances for medical purposes. It is well known that the startling discoveries of Becquerel and Curie in Paris were made on uranium obtained from material found in the mines of Joachimsthal. Soon afterward exhaustive researches in the mother substance in Joachimsthal showed the water found in the mines to be the most radio-active natural water in the world. A private syndicate was soon organized for the purpose of exploiting this natural resource; but public opinion forced the government to assume control of the affair and to erect a *Curanstalt*, a therapeutic institution, accessible to all classes of the population. From the material obtained in these government mines—in old days they yielded a fair amount of silver, too—a large quantity of radium bromid could be manufactured, and in the institute all kinds of treatment by radio-active substances will be given. The building was recently opened; it contains radio-active baths, a large quantity of the radium salts, and will be open all the year round. By pipes the water is drawn into the baths directly from the bottom of the mines, and filtered in such a way that it does not lose anything of its activity. The institution is in charge of an expert medical radiologist from the Vienna University.

Turbulent Demonstrations Against Inadequate Institutes

The Anatomical Institute of Vienna was erected some twenty-five years ago in a street which at that time was in the suburbs; the building itself was estimated to accommodate some 200 students. During the last twenty-five years, however, the number of medical students has increased in such a degree, and the popularity of the professors of the institution has been so marked, that the lectures are exceptionally crowded, and the building is insufficient for the accommodation of the large number of students eager to gain the fundamental knowledge of our art. In the dissecting-room only 200 chairs are available, while more than 500 students are at work at the same time and not all of these can find place at the dissecting tables. Even the facilities for washing the hands are on a scale which would hardly have been accepted a quarter of a century ago. Ventilation is very bad, for, owing to the rapid development of the suburb, the building is now surrounded by other buildings, and the windows cannot be opened whenever it would be required. Therefore the indignation of the students and the teaching staff of the university was strong when, a few years ago, a demand for improvement of the conditions was frustrated by the government for lack of means. This year, at the opening of the winter term, the students at once started a turbulent demonstration and, assuring the professor, Dr. Tandler, that the riot was not directed against him, began to disturb the lectures to cause a "strike." The professor sympathized with the students, went with them to the rector of the university, and a deputation was sent to the minister of education in order to demand the funds necessary for the removal of the worst grievances. They were granted money for a sufficient number of chairs, tables, washing apparatus and wardrobes for the cloak-rooms. The chief source of discontent, however, is the site of the institution itself and this cannot be changed at present.

Marriages

CLARA O. DEDRICK, M.D., De Tour, Mich., and Mr. W. W. Dunham of Drummond, Mich., at Sault Ste. Marie, Mich., October 18.

HARRY V. THOMAS, M.D., Chillicothe, Ill., to Miss Jane Neff of Oklahoma City, Okla., at Kansas City, Mo., October 15.

CARLISLE E. MCKEE, M.D., Braddock, Pa., to Miss Ethel Eleanor Sutmeyer of Wilkinsburg, Pa., October 19.

HENRY CLARKE THACHER, M.D., New York City, to Miss Ethel Anderson of Washington, D. C., October 21.

ANDREW S. REISOR, JR., M.D., Shreveport, La., to Mrs. Blanche Locke of DeQueen City, Ark., October 18.

ARTHUR H. ESTABROOK, M.D., Leicester, Mass., to Miss Jessie McCubbin, at Mt. Washington, Md., October 25.

JOHN DOUGLAS, M.D., New York City, to Mrs. Elizabeth Thayer Hoag of Washington, D. C., October 24.

MILLER M. HARSHBARGER, M.D., St. Anthony, Ida., to Miss Grace Campbell of Valier, Mont., October 18.

EMIL C. ROBITSHEK, M.D., Minneapolis, Minn., to Miss Leonora Millhauser of Chicago, November 1.

SPARRELL S. GALE, M.D., Roanoke, Va., to Miss Gretchen Harding of Canon City, Colo., October 17.

HOWARD H. SHEPLER, M.D., Philadelphia, to Miss Ethel F. Heyser of Hagerstown, Md., October 24.

ALEXANDER B. KALBAUGH, M.D., to Miss Rosalie Morrison, both of Westernport, Md., October 12.

JOSEPH W. PREISINGER, M.D., Renville, Minn., to Miss Ella Wigdahl of Crooks, Minn., October 8.

WOODSON J. MOSS, M.D., to Mrs. Luella Wilcox St. Clair, both of Columbia, Mo., October 22.

W. L. BREYFOGLE, M.D., to Mrs. Ella Naomi Pierce, both of Lake George, N. Y., October 14.

OSCAR PAUL CHESTER, M.D., to Miss Florence Cathryn Griffin, both of Chicago, October 18.

WILLIAM B. KUNZE, M.D., to Miss Eugenia Eimer, both of Belleville, Ill., October 18.

ROY F. BELLAIRE, M.D., Le Mars, Ia., to Miss Mary Ramsay, of St. Louis, recently.

Deaths

Agrippa Nelson Bell, M.D. Jefferson Medical College, 1842; founder of *The Sanitarian* in 1873 and its editor until 1904; a member of the American Public Health Association and American Climatological Association; president of the American Congress on Tuberculosis, 1901-2, and honorary president of the International Congress of Tuberculosis in 1904; passed assistant surgeon U. S. Navy from 1847 to 1855 with service during the Mexican War; a medical officer of the navy during the Civil War; superintendent of the Floating Hospital for Yellow Fever Patients, New York City, 1861; from 1870 to 1875 inspector for quarantines for the National Board of Health; a member of the National Quarantine Convention from 1857 to 1860; commissioner of quarantine of New York from 1870 to 1873; for twenty-one years visiting physician to the Brooklyn Hospital; died at his home in Brooklyn, October 15, from senile debility, aged 91.

George Frederick Jelly, M.D. Harvard Medical School, 1868; a member of the American Medical Association and American Medico-Psychological Association; a member of the Massachusetts State Board of Insanity and for many years chief examiner of the insane for the city of Boston; from 1869 to 1871 assistant city physician at the McLean Hospital, Waverly, and from 1871 to 1879 superintendent of that institution; first chairman of the Massachusetts State Board of Insanity; whose services were extensively sought as a consultant and medical expert in nervous and mental diseases; consulting physician to the New England Hospital for Women and Children; died at his home in Wakefield, October 24, from nervous breakdown, aged 69.

John W. Warner, M.D. Albany (N. Y.) Medical College, 1847; a member of the Medical Society of the State of New York; for more than fifty years a practitioner of New York City, but since 1898 a resident of Saratoga Springs; died at his home in that place, October 23, aged 88.

Wooten Moore Wilkerson, M.D. University of Virginia, Charlottesville, 1879; New York University, New York City, 1880; a member of the American Medical Association; once president of the Medical Association of the State of Alabama, and at the time of his death chairman of the committee of health for Montgomery County; visiting physician to St. Margaret's Hospital, Montgomery; a trustee of the Bryce Insane Hospital and president of the Montgomery County Board of Health; died at his home in Montgomery, October 22, from heart disease, aged 53.

Harvey E. Williamson, M.D. Keokuk (Ia.) Medical College, 1894; a member of the Kansas Medical Society; local surgeon of the Frisco System and Missouri, Kansas and Texas Railway, at Olathe; surgeon to the deaf and dumb institution of Kansas, Olathe; who five years ago had the misfortune to be thrown from, and run over by a street car in Kansas City, the injury necessitating the amputating of both feet; died at the home of his parents in Clarinda, Ia., October 23, aged 42.

John Reese Uhler, M.D. University of Maryland, Baltimore, 1861; one of the founders of Baltimore Medical College and for several years professor of chemistry and surgery in that institution; surgeon of the Fifth Maryland Volunteer Infantry during the Civil War; one of the founders and once president of the Baltimore Medical Association and one of the founders of the Clinical Society of Baltimore; died at his home in Baltimore, October 9, from nephritis, aged 72.

Samuel Alexander Helfer, M.D. New York University, New York City, 1875; a member of the Medical Society of New Jersey; in 1895 city physician and a member of the board of health of Hoboken; for many years physician to the steamship companies whose docks are in Hoboken; senior member of the board of trustees of the Hoboken Board of Trade; died at his home, October 24, from diabetes, aged 67

Mathias William Dvorak, M.D. College of Physicians and Surgeons, Chicago, 1903; a member of the State Medical Society of Wisconsin and secretary for two terms and up to the time of his death of the La Crosse County Medical Society; a beloved and highly respected young physician of La Crosse; died in St. Francis Hospital in that city, October 19, from typhoid fever, aged 31.

W. R. Hurst, M.D. Western Reserve University, Cleveland, 1862; a member of the Ohio State Medical Association and for nearly fifty years a practitioner of Piketon; died in the Protestant Hospital, Columbus, October 24, two days after a surgical operation, aged 74.

Nelson E. Bradley, M.D. Medical College of Ohio, Cincinnati, 1882; for many years a practitioner of Felicity; formerly a member of the local U. S. pension examining board; died at his home near Batavia, O., October 22, from heart disease, aged 53.

James H. Gaston, M.D. Miami Medical College, Cincinnati, 1872; a veteran of the Civil War; from 1888 to 1890 treasurer of Monroe County, Ind.; died at his home in Axtell, Kan., October 11, from heart disease, aged 67.

William A. H. Jenner, M.D. University of Munich, Germany, 1872; a member of the Washington State Medical Association, and a pioneer practitioner of Seattle; died recently and was buried October 15, aged 67.

Willard B. Croft, M.D. Cleveland University of Medicine and Surgery, 1882; a specialist on diseases of the eye, ear, nose and throat, of Medina, O.; died at his home, August 26, from leptomeningitis, aged 55.

Charles A. Butner, M.D. University of Louisville (Ky.), 1885; a member of the Medical Association of Georgia; died suddenly at his home in Jackson, October 16, from acute gastritis, aged 52.

William Curry, M.D. Jefferson Medical College, 1895; a member of the Butler County (Pa.) Medical Society; died in Butler, Pa., October 11, after an operation for right pyonephrosis, aged 40.

William Graham Armstrong, M.D. Medical College of Ohio, Cincinnati, 1882; formerly of Flemingsburg, Ky.; died at his home in Lantana, Fla., March 4, from pulmonary tuberculosis, aged 50.

Forrest B. Seymour, M.D. Medical College of Ohio, Cincinnati, 1889; a member of the State Medical Association of Texas; died at his home in Beeville, October 7, from nephritis, aged 45.

Peter Fehr, M.D. Cleveland College of Physicians and Surgeons, 1896; a member of the Ohio State Medical Association; died at his home in Akron, October 21, from tuberculosis, aged 44.

George Joshua Atkins (license, North Carolina, 1894); of Newell; a member of the Medical Society of the State of North Carolina; died in Charlotte, N. C., July 18, from uremia, aged 57.

John Jessiah Bilheimer, M.D. Jefferson Medical College, 1891; formerly a member of the American Medical Association; died suddenly at his home in Priceburg, Pa., October 19, aged 42.

Henry George, M.D. Detroit College of Medicine, 1887; physician of Wayne County in 1896 and 1897; died at his home in Detroit, October 15, from cerebral hemorrhage, aged 51.

Charles Christian Fredigke, M.D. College of Physicians and Surgeons, Chicago, 1887; of Chicago; died at the Alexian Brothers' Hospital in that city, October 21, aged 72.

Winfield Taylor Browning, M.D. Bellevue Hospital Medical College, 1873; for several terms burgess of Orbisonia, Pa.; died at his home, October 16, from diabetes, aged 63.

Theodore Lavilvarasse, M.D. St. Louis College of Physicians and Surgeons, 1896; of Boston; died in the Boston City Hospital, Oct. 25, 1910, from pulmonary tuberculosis.

Luther Leonidas White (license, Randolph County, Ala., 1879); of Roanoke, Ala.; died in Springfield, Ala., April 22, 1910, from angina pectoris, aged 58.

Harman Yerkes Longacre, M.D. University of Michigan, Ann Arbor, 1876; died at his home in St. Charles, Ill., October 18, from hemorrhage, aged 56.

I. M. Hightower, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1889; died at his home in Cartersville, Ga., October 11, aged 47.

Everett F. Harrington, M.D. Lincoln (Neb.) Medical College, 1902; died at his home in Watertown, S. Dak., October 6, from heart disease, aged 50.

William L. Gibson (license, Arkansas, 1903); a practitioner of Craighead, Ark., since 1882; died at his home in Greenboro, October 13, aged 55.

Robert Lee Caldwell, M.D. Washington University, St. Louis, 1899; died at his home in Grove, Okla., February 21, from septicemia, aged 44.

Joseph Werthner, M.D. Miami Medical College, Cincinnati, 1882; of Burdick, Kan., formerly of Dayton, O.; died in Elmo, Kan., October 20.

William G. Johnson, M.D. University of Pennsylvania, Philadelphia, 1870; died at his home in Farmington, N. C., October 14, aged 67.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

OZONIZED TESTIMONIALS

Obtaining Clinical Reports on "Oxyoline Therapy"

A few weeks ago we called attention to the method adopted by the proprietor of a medical journal in obtaining testimonials favorable to products advertised in his publication. As will be remembered, the method consisted in sending out letters to his subscribers telling them how highly he, the proprietor, valued the products and asking physicians if they would not "cooperate" by writing their opinion of the same products. A crude modification of this method of obtaining testimony favorable to products advertised in medical journals has recently been called to our attention.

The *American Journal of Physiologic Therapeutics* is the somewhat imposing title of a publication that is said to be "a practical journal of progress in non-medicinal therapy." Incidentally, the advertising pages of this non-medicinal publication are devoted largely to medicinal products! The proprietor of this journal is also the proprietor of another journal which is said to be "a journal of commercial medicine." Both of these journals carry advertisements—large ones—of a device known as the "Oxyoline Apparatus," which is supposed to depend for its action mainly on its ability to produce ozone. Moreover, the proprietor of these journals is understood to be the advertising agent for the concern that

exploits this "apparatus!" What the Oxyoline machine will not do in the way of abolishing or preventing disease is negligible—if the claims of the promoters are to be believed, which they are not. So much by way of explanation.

Three weeks ago,[1] in commenting on "The Alleged Hygienic Value of Ozone," we seem to have hurt "business"—advertising and other. At any rate, the following letter from the publisher and editor of the *American Journal of Physiologic Therapeutics* has been received by physicians:

October 27, 1911.

My dear Doctor:—I have just read a most remarkable editorial in THE JOURNAL A. M. A., Oct. 21, 1911, page 1370, entitled "The Alleged Hygienic Value of Ozone."

Does your clinical experience prove this or not? I am tempted to make a "big stir" regarding this wholly unwarranted attack on Ozone, and I am very anxious to produce an interesting symposium on Ozone in the next issue of *Physiologic Therapeutics*. Will you not send me four or five hundred words for publication, giving your personal opinion regarding this matter as based on your own clinical experience?

If, in your reading, you have found any articles on this subject or any clippings relating to Ozone or Oxyoline therapy, and you can send them along, I will be very grateful indeed, and in remuneration for your cooperation will be pleased to give you a one year's subscription to *Physiologic Therapeutics* or a five years' subscription to *Successful Medicine*.

I await your prompt reply, and, to facilitate this, a self-addressed, stamped envelope is enclosed.

Very cordially yours,

PHYSIOLOGIC THERAPEUTICS
Henry R. Harrower,
Managing Editor.

The *quid pro quo* is perfectly evident. Stated a little more baldly this letter seems to mean: "Send us a testimonial on the 'Oxyoline Apparatus' and we will give you a year's subsubscription to our journal." The arrangement must be an eminently satisfactory one. The advertiser is "boosted"; the advertising agent—the editor and publisher in this instance—gets more business; the original article department of the journal is cheaply and easily filled; the subscription list is boomed with what the postal authorities we presume will consider *bona fide* subscribers, and altogether it is a very admirable arrangement—for everyone except the public and the medical profession.

Those physicians who read Mr. Irwin's admirable series of articles on "The American Newspaper" doubtless had their indignation aroused when they learned that certain large metropolitan dailies would have their dramatic critics write fulsome puffs of current theatrical attractions on the tacit understanding that the theatrical company would purchase large advertising space. And yet this exhibition of venality only affected the public's pocketbook; it in no way jeopardized its health. Of course, such dramatic criticism is a farce; but what about "scientific criticism" of therapeutic agents that is purchased at the price of a subscription to a medical journal by those who are financially interested in the exploitation of such agents?

CINERARIA MARITIMA

Report of the Council on Pharmacy and Chemistry

Occasional inquiries in regard to the therapeutic value of *Cineraria maritima* caused the Council to consider the drug with reference to its fitness for inclusion in N. N. R. among non-official, non-proprietary remedies. The following report, having been submitted to the Council by a subcommittee, was adopted and its publication authorized.

W. A. PUCKNER, Secretary.

To the Council:—The juice of a plant referred to as *Cineraria maritima* was at one time supposed to be of value in the treatment of cataract and certain other affections of the eye. No scientific evidence is available to show that the drug is therapeutically active, and its value is no doubt correctly estimated by Dr. Casey Wood, who ("Ophthalmic Therapeutics," p. 446; Cleveland Press, Chicago, 1909) says:

"Still, a few respectable names have been associated with its [*Cineraria maritima*] employment in that capacity and it only remains to be said that the instillation into the conjunctival sac of a preparation of this or any other member of the *Senecio* family has about as much effect on the resolution or dispersal of opacities due to organic changes in the lens as pouring the same down the back of the patient's neck!"

The plant from which *Cineraria maritima* juice is claimed to be prepared is commonly referred to in literature as *Cineraria maritima*, but is more correctly described as *Senecio cineraria*, D. C.

It may be considered a matter of indifference whether a remedy like this be advertised for the treatment of such disease as cataract, providing its application could do no harm, but it must be remembered that it is recommended also for other diseases of the eye in which its use, by postponing efficient treatment, would be the means of serious damage or even loss of vision.

Since there is no evidence to show that this drug is of any therapeutic value, it is recommended that it be not admitted to the list of non-official, non-proprietary remedies in N. N. R., and that the Council formally express its opinion that the drug, as judged by the evidence which is available, is without value in the treatment of cataract or similar diseases of the eye.

EDITORIAL COMMENT: *Cineraria maritima* would long since have been relegated to the limbo of discarded and discredited drugs had it not been given a semiproprietary character by a St. Louis nostrum house—the Walker Pharmacal Company—which, like the Manola Chemical Company, is, we understand, practically a subsidiary concern of the Luyties Homeopathic Pharmacy Company. The Walker concern exploits this drug under the name Succus Cineraria Maritima (Walker). Its method of exploitation consists in publishing testimonials, which it dignifies with the name "clinical reports," from men whom it designates as "representative physicians." As indicative of what constitutes representative physicians, we find that of the seven testimonials given in their pamphlet the names of three of the signers are not to be found in any medical directory.

The exploitation of Succus Cineraria Maritima (Walker) is the oft-repeated story of the resurrection of discarded and worthless drugs for the purpose of creating proprietorship in a nostrum. *Cineraria maritima* is worthless; its therapeutic value is *nil*. By the prodigal use of printers' ink, the medical profession—and through it the public—has been humbugged into believing that it possesses curative value.

Correspondence

Leishmaniosis in China

To the Editor:—THE JOURNAL, August 12, contained an editorial on "Infantile Splenic Anemia and Kala-Azar" which is of considerable interest to me as I live in a district where leishmaniosis is common, though the positive diagnosis made by finding the parasite is comparatively recent. I am writing you because your suggestion that cases may possibly occur in America among immigrants is entirely reasonable, and our experiences may be of some use to men who are on the lookout for it.

The microscopic diagnosis is much more troublesome than that of malaria because the parasite is not always found in the circulating blood or, if it should be present, it is in such scanty numbers that the search is exceedingly tedious and it is practically useless to depend on it as a means of diagnosis. It is much more easily found in the smears made from splenic puncture, but the spleen is so friable that a number of fatal hemorrhages are reported even when great care was used, and some of the best authorities discourage the use of the method because of this danger. Puncture of the liver is less dangerous but it is also a less certain source of the parasite and long search may be necessary to find it. Even splenic punctures sometimes require a considerable time before the search is

1. THE JOURNAL A. M. A., Oct. 21, 1911, p. 1370.

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successful. The organism is said to be found in the fluid of fly-blisters and croton-oil vesicles, but not regularly, and we have failed to demonstrate *Leishmania* in the two or three cases in which this method has been tried.

During the last few months I have used successfully a plan which I have not seen described elsewhere. One of the superficial lymph-nodes, either the postcervical or inguinal, is excised under local anesthesia of quinin and urea hydrochlorid, and smears are made from its cut surface. In seven successive cases the parasite was found readily, six of the seven showing it in less than five minutes' search, the other requiring twenty minutes. From this brief experience it would seem probable that the method is quicker, more certain and less dangerous than those previously practiced.

The smears are best stained by Wright's, Leishman's or Giemsa's methods. They stain less readily than do malaria organisms in our experience, requiring longer staining; we have had good results with Leishman's stain by using the pure staining fluid for five minutes, adding the distilled water for ten or fifteen minutes and then clearing by distilled water alone for two minutes. The methyl alcohol evaporates quickly during the first step, causing precipitates and a dirty slide; this may be avoided by covering the slide with a Petri dish.

The parasites are harder to recognize than malarial organisms, as they are smaller and contain no pigment, and it is sometimes not easy to decide whether a given body is the parasite or merely detritus staining in a similar manner. Those not familiar with them would do well to compare their slides with the beautiful plate in the frontispiece of Manson's "Tropical Diseases," fourth edition.

The evidence in favor of the bedbug as a possible intermediate host not only consists in the fact that the parasite multiplies and shows the same developmental forms in the bug as are found in cultures, but also in the success that Rogers has had in preventing the disease by prophylactic measure directed against bedbugs (Rogers: "Fevers of the Tropics," p. 93.)

The two diseases to which you refer in the title of your editorial, if not absolutely identical, would seem at least very closely related. The practical identity of the symptoms and the pathology, and of the morphology of the parasite, furnishes a strong presumption in favor of the identity of the diseases. The failure which you report to culture the parasite of kala-azar continuously and the failure to inoculate dogs may be due to some slight difference in technic. Although there is a difference in the age of the individuals attacked, this is less than would appear, for Rogers (in "Fevers of the Tropics," p. 50) reports that in Assam 50 per cent. of the patients are under 20 years, and in Sylhet 70 per cent. are under 20. There seems to be a gradual gradation in the average age of the patients in different places. Our patients are almost all children, but older than those reported by Nicolle from Tunis, being midway between them and Rogers' Indian patients. Furthermore, it is apparently true that adults may be attacked by the Mediterranean type of leishmaniosis, for two cases, one patient 18 years old and the other 30, are reported from Athens (THE JOURNAL, May 13, 1911, p. 1428).

SAMUEL COCHRAN, Hope Hospital,
Hwaiyuan Anhwei, China.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

BREEDING AND CARE OF GUINEA-PIGS AND RABBITS

To the Editor:—Have you any information relative to the care of laboratory animals, such as guinea-pigs and rabbits, their food, habits of life, diseases? I am interested more especially in the last, as our animals are not doing well. Can you give me a reference list where I can obtain this information? The ordinary books on zoology do not contain much on the care of sick guinea-pigs.

W. J. DOYLE, St. Louis.

ANSWER.—The above letter was referred to the director of the Hygienic Laboratory of the U. S. Public Health and Marine-Hospital Service, who replies:

"At the Hygienic Laboratory we raise between 4,000 and 6,000 guinea-pigs every year and our success has been unusually satisfactory.

"First of all, a warm, sunny building should be provided, one that may be heated during cold weather. It has been our experience that if the temperature remains below 65 F. for any length of time the breeding is very much lessened and, moreover, many of the animals die. We keep four female breeders and one male in each cage. The male is allowed to remain in the cage all the time. The young are not removed from the cage until about four weeks old, when they are removed, each sex being placed in separate runs. It is important that the cages be cleaned out at least three times a week.

"The guinea-pigs are fed each day with a mixture of about equal parts of bran and oats and some green food—in the winter this is usually cabbage or carrots, during the summer alfalfa, green corn-stalks or clover. Each cage is provided with water and a small lump of rock salt. For bedding we use a small amount of cut hay; in addition to its use as bedding, the animals are fond of it. It is important that healthy stock be used for breeding purposes and that inbreeding be prevented as much as possible.

"The only diseases to which we have found our guinea-pigs liable are a streptococcic adenitis, which has given us some trouble at times; and a few years ago we lost a considerable number from a streptococcic pneumonia. A few female guinea-pigs die of postpartum infection with an organism of the hog-cholera group. Other than the above they suffer with practically no diseases. When given proper attention, their breeding is a simple and profitable proposition.

"We have raised but few rabbits at the laboratory, as we have found it cheaper to buy them on account of the cost and difficulty of raising them. They are subject to many more diseases, especially the young rabbits, than are guinea-pigs, the most important of these being coccidiosis of the intestine and liver, and pneumonia.

"The food for rabbits is the same as that given above for guinea-pigs. Both species of animals do better when kept in a warm building. We do not allow any of our animals to run outdoors. A cement floor is inadvisable."

MORTON'S FLUID

To the Editor:—Please give me the formula for Morton's fluid and state its use.

Z. SLAVINSKI, M.D., Warsaw, Poland, Russia.

ANSWER.—Morton's fluid has the following formula:

R	Gm. or c.c.	
Iodin	0.6	gr. 10
Potassium iodid	2	gr. 30
Glycerin	30	ʒ 1

It was formerly employed by injection for the cure of spinal meningocele. The sac being cleaned, the child was placed on its side and a little chloroform was given. A fine trocar was plunged obliquely in at the side through sound skin, little or no fluid being drawn off, and 1 dram of Morton's fluid injected. The trocar was withdrawn and the puncture sealed with a bit of gauze and iodoform collodion.

SANITARIUM SYNONYMOUS WITH SANATORIUM

To the Editor:—Please give the proper use of the words "sanitarium" and "sanatorium" as in naming an institution for the care of the sick.

F. J. W.

ANSWER.—Use "sanatorium." Some make a distinction in the meaning of these two words, defining "sanitarium" as a resort for the preservation of health, and "sanatorium" as an institution for the treatment of chronic diseases, such as tuberculosis and nervous disorders. The two words are properly synonymous. The "Century" and "Murray" (the Oxford dictionary which is the court of last appeal among scholars and philologists) give "sanatorium" as the correct form; both, however, include "sanitarium" but refer to "sanatorium" for definition. "Sanatorium" is the neuter of the late Latin word *sanatorius*, meaning health-giving.

IRON SOLUTION GIVEN IN CAPSULES TO PROTECT TEETH

To the Editor:—I have noted lately in some of the medical journals discussions as to the best way to protect the teeth when giving iron. For some time now I have ordered a dropper and empty capsules to accompany the tincture, with directions to put the prescribed number of drops of the tincture in the capsule, to put on the cap and take, followed by water. In this way the teeth are not affected.

J. LLOYD WOODRUFF, Salt Lake City.

The Public Service

Medical Department, U. S. Army

Changes during the week ended Nov. 4, 1911.

Lake, G. B., lieut., ordered to Jefferson Barracks, Mo., during the absence of Capt. R. W. Bryan. Arrived Oct. 28, 1911.

Siler, J. F., captain, granted leave of absence for one month and twelve days.

Webber, H. A., major, granted leave of absence for one month on relief from Fort Niagara.

Napier, E. L., lieut., granted leave of absence for one month, about December 1.

Smith, A. M., lieut.-col., granted leave of absence for one month, about November 5, with permission to apply for one month.

Mason, G. L., dental surgeon, October 30, left Fort Omaha, Neb., for Fort Crook, Neb.

Kean, J. R., lieut.-col., ordered to Havana, Cuba, to represent the Medical Department of the Army at the meeting of the American Public Health Association, Dec. 4 to 9, 1911.

The following named officers are detailed to represent the Medical Department of the Army at the Clinical Congress of Surgeons of North America, to be held at Philadelphia, Nov. 6 to 17, 1911: Reynolds, F. P., major; Persons, E. E., major; Reynolds, G. R., major; Williams, A. W., captain.

Borden, W. B., lieut., granted leave of absence for two months.

Fish, O. C., lieut., sick leave of absence extended one month.

Buchsbaum, Maurice, M.R.C., November 1, relieved from treatment at army general hospital, San Francisco, and ordered to his home; granted two months and three days leave of absence.

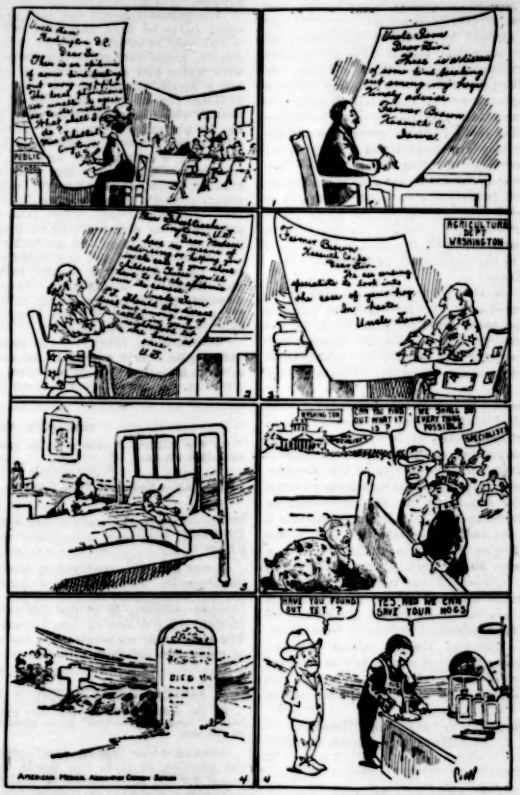
Patterson, R. U., major, November 1, ordered to proceed to Hartford and New Haven, Conn., to give instructions to the Field Hospital and Ambulance Company, Organized Militia of Connecticut.

Bloombergh, H. D., major, November 1, granted leave of absence for two months.

Whitney, W. W., M.R.C., October 30, left Fort McPherson, Ga., en route to Fort Moultrie, S. C., on detached duty.

Clark, John A., capt., November 1, relieved from duty at Plattsburg Barracks and ordered to Fort Wadsworth, N. Y.

Humphreys, Harry G., captain, November 1, relieved from duty at Fort Wadsworth and ordered to Plattsburg Barracks, N. Y.



Medical Corps, U. S. Navy

Changes during the week ended Oct. 28, 1911:

Brooks, F. H., P. A. surgeon, detached from the *Birmingham* and ordered to the *Marietta*.

Hough, F. P. W., P. A. surgeon, ordered to the *Franklin*.

Blackwood, N. J., surgeon, detached from the naval hospital, New York, and ordered to command the naval hospital, Canacao, P. I.

Changes during the week ended Nov. 4, 1911.

Giltner, H. A., P. A. surgeon, commissioned passed assistant surgeon from Sept. 10, 1911.

McLean, N. T., P. A. surgeon, ordered to duty at the naval hospital, New York.

Mackenzie, E. G., P. A. surgeon, detached from the naval hospital, New York, and granted sick leave for six months.

Jones, E. L., P. A. surgeon, ordered to duty at the naval hospital, Canacao, P. I.

U. S. Public Health and Marine-Hospital Service

Changes for the fourteen days ended Oct. 25, 1911:

Carter, H. R., surgeon, granted two months' leave of absence from Sept. 14, 1911, on account of sickness.

White J. H., surgeon, granted one month's leave of absence from Oct. 12, 1911, on account of sickness.

Gwyn, M. K., P. A. surgeon, relieved from duty at Baltimore, and directed to proceed to Ellis Island, N. Y., and report to Chief Medical Officer for duty.

Robertson, H. McG., P. A. surgeon, on being relieved by Assistant Surgeon R. H. Lyon, directed to proceed to Baltimore and report to medical officer in command for duty and assignment to quarters.

Lyons, R. H., asst.-surgeon, relieved from duty at Ellis Island, N. Y., and directed to proceed to the Tampa Bay Quarantine Station and assume command of the Service.

Kearney, R. A., asst. surgeon, relieved from duty on revenue cutter *Manning* and directed to rejoin station at San Francisco.

Schwartz, Louis, asst. surgeon, relieved from duty on revenue cutter *Tahoma* and directed to report to the medical officer in charge at Seattle for temporary duty.

Board of medical officers convened to meet at Baltimore, Oct. 25, 1911, for the examination of an officer of the Revenue-Cutter Service, to determine his fitness for promotion. Detail for the board: Surgeon W. P. McIntosh, chairman; Passed Assistant Surgeon John McMullen, recorder.

Changes for the seven days ended Nov. 1, 1911.

Stimpson, W. G., surgeon, detailed to represent the Service at the second annual meeting of the Clinical Congress of Surgeons of North America, to be held at Philadelphia, Nov. 7 to 16, 1911.

Blue, Rupert, surgeon, directed to proceed to Honolulu, T. H., and report to the Governor of Hawaii for special duty.

Lavinder, C. H., P. A. surgeon, detailed to represent the Service at a conference on pellagra to be held in Columbia, S. C., Nov. 2, 1911.

Anderson, J. F., P. A. surgeon, directed to proceed to New York on special temporary duty.

Currie, Donald H., P. A. surgeon, on being relieved by Passed Assistant Surgeon George W. McCoy, directed to proceed to San Francisco and assume charge of the plague laboratory.

Goldberger, J., P. A. surgeon, directed to proceed to Mexico City on special temporary duty.

Schereschewsky, J. W., P. A. surgeon, directed to attend a meeting of the executive committee of the International Congress on Hygiene and Demography to be held in New York, Nov. 4, 1911.

Francis, Edward, P. A. surgeon, directed to proceed to Baltimore on special temporary duty.

McCoy, George W., P. A. surgeon, relieved from duty in San Francisco and directed to proceed to Honolulu, T. H., and assume command of the leprosy investigation station.

Rucker, W. C., P. A. surgeon, directed to proceed to San Francisco and report to Surgeon Rupert Blue for temporary duty.

Medicine and Nature.—Fernel, the great medical teacher, says: "Medicine, the eye always fixed on Nature, and, as it were, made in her image and resemblance, takes her law for guide, studying and bending every effort to imitate her, in order to preserve man's health constant and exempt from maladies, to restore and reestablish it when it totters and becomes deranged, finally to prolong life itself sound and safe as long as it is possible."

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Medical Economics

POSTGRADUATE COURSE FOR COUNTY SOCIETIES

Third Month—Second Weekly Meeting

ACUTE ARTICULAR RHEUMATISM[1]

PATHOLOGY: Changes in synovial membranes, periarticular structures, cartilages, effusion, tendon sheaths. Changes in endocardium, pericardium, myocardium. Blood changes.

CLINICAL HISTORY: Prodromata, fever, angina, etc. Invasion, fever, chills, synovitis, pain, swelling, perspiration. Duration, defervescence.

COMPLICATIONS: Hyperpyrexia—Time of onset, cerebral symptoms, prostration.

Cardiac Affections—Endocarditis, frequency, time of onset, termination, diagnosis. Pericarditis, occurrence, forms, symptoms, physical signs. Myocarditis, association with other lesions, dilatation.

Pulmonary Affections—Pneumonia, pleurisy, accompanying cardiac lesions.

Nervous complications—Delirium, coma, convulsions, chorea, meningitis.

Skin Lesions—Sudamina, erythema, urticaria, purpura. Subcutaneous nodules, distribution, pathology.

TREATMENT

PROPHYLAXIS: Exposure to cold, occupation, local predisposition, tonsilitis.

Internal Medication—Salicylate acid, its compounds. Physiologic action. Therapeutic action. Untoward effects. Antipyrin and acetanilid. Alkaline treatment.

Local Applications—Counter-Irritants. Cold and Heat. External applications.

1. McCrea: THE JOURNAL A. M. A., 1903, xl, 211. Phillips: Cleveland Med. Jour., 1906, v, 436

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Regular, Little Rock, November 14. Sec., Dr. F. T. Murphy, Brinkley; Homeopathic, Little Rock, November 14. Sec., Dr. P. C. Williams, Texarkana.

CONNECTICUT: Regular, City Hall, New Haven, November 14. Sec., Dr. Charles A. Tuttle, 196 York Street; Homeopathic, Grace Hospital, New Haven, November 14. Sec., Dr. Edwin C. M. Hall, New Haven; Eclectic, Hotel Garde, New Haven, November 14. Sec., Dr. Thomas S. Hodge, 19 Main Street, Torrington.

LOUISIANA: Homeopathic, New Orleans, November 13. Sec., Dr. J. T. Crebbin, 1207 Maison Blanche Building.

MAINE: City Council Rooms, Portland, November 14-15. Sec., Dr. F. W. Searle, 776 Congress Street.

MASSACHUSETTS: State House, Boston, November 14-16. Sec., Dr. Edwin B. Harvey.

TEXAS: Fort Worth, November 14-16 (change of date from previous notification). Sec., Dr. J. D. Mitchell.

WEST VIRGINIA: Hotel Waldo, Clarksburg, November 13-15. Sec., Dr. H. A. Barbee, Point Pleasant.

Missouri June Report

Dr. Frank B. Hiller, secretary of the Missouri State Board of Health, reports the written and oral examination held at St. Louis, June 12-14, 1911. The number of subjects examined in was 14; total number of questions asked, 105; percentage required to pass, 75. The total number of candidates examined was 181, of whom 146 passed and 32 failed. Three candidates did not complete the examination. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Howard University, Washington, D. C.	(1910)	75
Rush Medical College	(1902) 79; (1909)	84
College of Physicians and Surgeons, Chicago	(1910)	84
Bennett Medical College	(1911)	78
Keokuk Medical College, College of Phys. and Surg.	(1905)	75
University of Kansas	(1911)	81, 91
University of Louisville	(1910) 75; (1911)	77, 81
Johns Hopkins University	(1911)	85
Harvard Medical School	(1901) 85; (1911)	89
Tufts College Medical School	(1908)	85
University of Michigan, Dept. of Med. and Surg.	(1911)	80
University Medical College, Kansas City	(1896) 75; (1910) 75; (1911) 75, 75, 75, 76, 76, 76, 77, 79, 80, 80, 82, 83.	
Washington University	(1907) 76; (1911) 75, 75, 75, 75, 75, 76, 77, 77, 77, 77, 78, 79, 79, 79, 80, 81, 81, 81, 82, 83, 83, 83, 83, 84, 84, 84, 85, 85, 86, 87, 88.	
St. Louis University	(1910) 80; (1911) 75, 75, 75, 75, 75, 77, 79, 79, 79, 81, 81, 81, 82, 82, 82, 83, 83, 83, 83, 84, 84, 84, 84, 85, 85, 85, 86, 87, 87, 88, 88, 88, 89.	
American Medical College, St. Louis	(1905) 75; (1911) 75, 75, 75, 75, 78, 82.	
Barnes Medical College	(1909) 79; (1911) 75, 75, 76, 76, 76, 76, 77, 77, 78, 78, 78, 78, 79, 80, 81, 83, 84, 84.	
St. Louis College of Physicians and Surgeons	(1909) 75, 75, 75; (1910) 75, 75, 76; (1911) 75, 75, 75, 80, 84.	
Ensworth Medical College	(1911)	83
Homeopathic Med. College of Missouri	(1891) 75; (1909)	75
Long Island College Hospital	(1905)	75
Leonard School of Medicine	(1905)	81
Eclectic Medical College, Cincinnati	(1911)	81
Meharry Medical College	(1910) 75, 75; (1911) 76, 77, 78, 78.	
University of Nashville	(1907) 77; (1911)	82

FAILED

College		
University of Louisville	(1909) 68; (1910) 67; (1911)	57
Barnes Medical College	(1907) 51; (1909) 67; (1910) 69; (1911) 64, 65, 65.8, 67, 69.	
University Medical College, Kansas City	(1910) 66; (1911) 50, 59, 67.	
St. Louis College of Physicians and Surgeons	(1906) 62; (1910) 66; (1911) 59, 61, 64, 69.	
Ensworth Medical College	(1909) 53; (1910)	60
Kansas City Hahnemann Medical College	(1911)	60, 70
Washington University, St. Louis	(1911)	69
American Medical College, St. Louis	(1910) 63; (1911)	66, 69
St. Louis University	(1907)	68
Meharry Medical College	(1910) 68; (1911)	70

Georgia Homeopathic October Report

Dr. R. E. Hinman, secretary of the Homeopathic Board of Medical Examiners of the State of Georgia, reports that at the meeting held October 10, 1911, 2 candidates were licensed through reciprocity. The following colleges were represented:

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Chicago Homeopathic Medical College	(1897)	Illinois
Detroit Homeopathic Medical College	(1901)	Michigan

Rhode Island October Report

Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the written examination held at the State House, Providence, Oct. 5-6, 1911. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 80. The total number of candidates examined was 14, of whom 13 passed and 1 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Yale Medical School	(1908) 84.5; (1911)	86.8
Rush Medical College	(1905)	83.1
University of Maryland	(1911)	83.5
College of Physicians and Surgeons, Baltimore	(1911)	84
Tufts College Medical School	(1911)	81.5
Harvard Medical School	(1901)	86.7
Dartmouth Medical School	(1908)	88.1
University of Pennsylvania	(1909) 91; (1911)	85.1
Laval University, Quebec	(1911)	82.2
McGill University, Quebec	(1909)	84.8
Queen's University, Ontario	(1908)	89.8

FAILED

College		
University of Vermont	(1910)	76

Wyoming October Report

Dr. A. B. Tonkin, secretary of the Wyoming State Board of Medical Examiners, reports the written and oral examination held at Riverton, Oct. 9-11, 1911. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 4, all of whom passed. Three candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.
Marion-Sims College of Medicine	(1897)
Creighton Medical College	(1910)
Columbus Medical College	(1881)
Jefferson Medical College	(1910)

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery	(1910)	Illinois
Rush Medical College	(1910)	Illinois
Lincoln Medical College	(1906)	Kansas

Society Proceedings

COMING MEETINGS

Am. Assn. for Prevention of Infant Mortality, Chicago, Nov. 16-18.
American Physiological Society, Baltimore, Dec. 27-30.
American Public Health Association, Havana, Cuba, Dec. 4-9.
Southern Medical Association, Hattiesburg, Miss., Nov. 14-16.
Southern Surg. and Gynecol. Assn., Washington, D. C., Dec. 12-14.
Western Surg. and Gynecol. Assn., Kansas City, Mo., Dec. 18-19.

KENTUCKY STATE MEDICAL ASSOCIATION

Fifty-Sixth Annual Meeting, held at Paducah, Oct. 24-26, 1911

The President, DR. J. E. WELLS, Cynthiana, in the Chair

Officers Elected

A list of the newly elected officers was published November 4, p. 1545.

Axis Traction Forceps

DR. DELIA CALDWELL, Paducah: This instrument is not used as often as it should be. Practitioners should make use of it in all suitable cases.

What the Physician Can Do for the Diseases of Women in His Office and at the Bedside

DR. GEORGE J. HERMAN, Newport: More than 90 per cent. of gynecologic patients consult the general practitioner for one of two things, either pain or irregular menstruation. Again, the general practitioner sees for the first time the great majority of women who suffer from malignant disease of the breast and uterus. What can he do for those patients? He must make an early diagnosis, and advise early and radical treatment. I want to emphasize the value of absolute rest in inflammatory conditions of the female pelvis.

DISCUSSION ON PAPERS BY DRS. CALDWELL AND HERMAN

DR. T. A. FRAZER, Marion: Dr. Herman struck the keynote when he says we should put these patients to bed and have them rest. When a woman is suffering from an inflammation of the pelvic viscera, it is just as necessary that she be confined to bed and kept there for a while as is a case of typhoid. There is nothing so important for these cases as absolute rest.

DR. D. O. HANCOCK, Henderson: We do not use forceps enough. If we did, much pain would be obviated and exhaustion guarded against. With a reasonable amount of skill, the damage which may be done by the forceps does not compare with the damage that is done by the head by prolonged pressure and waiting. I can more certainly protect the perineum by having forceps on than I can by taking them off.

DR. J. S. LOCK, Barboursville: Among country practitioners there is a good deal of prejudice against the use of forceps, either on account of lack of skill in using them or to gain the favor of the public. I make it a practice to use forceps if I have a tedious case and can get the parts in proper condition. I think it is just as much our duty to relieve suffering mothers with the use of forceps as it is with anything else that comes in our line of work. The general practitioner is responsible for the infrequent use of forceps, to a great extent. If the practitioner does not know how to use this instrument, he ought to learn how. We ought to begin to educate the people about the use of forceps and about the advantages that come to them from such use.

DR. C. J. SLAYTON, Greenville: I have been engaged in the practice of medicine for forty years. I have used forceps oftentimes, but only when I think it is absolutely necessary. I depend largely on the *vis medicatrix naturæ*. He who practices obstetrics and has patience and waits is the safest man. I did not see a rupture of the perineum for fifteen or twenty years after I began to practice.

DR. J. T. REDDICK, Paducah: I have had a pair of axis-traction forceps for the past six or eight years. No physician who pretends to do very much obstetric practice should be without this instrument because of its value in selected cases. In high forceps cases and in other cases that are difficult, the axis-traction forceps affords speedy relief and its manipulation is easy. I have saved the lives of many infants by the timely use of forceps.

DR. J. B. MURPHY, Chicago: Every obstetrical case is a surgical case. Fortunately, Providence has so ordained that the tissues, lacerated and injured in every surgical case, shall take care of a large quantity of material, unless the dose is very large and of the most virulent type, by the infiltration edema that occurs preceding parturition. It is entirely different when we come to abortion and premature labor. There is where we get out fatal infections. There is where women are killed by interference and manipulation and handling without taking aseptic or antiseptic precautions. We see these cases of infection in their worst forms after they have passed out of the hands of general practitioners, and they come to us in the superlative degree of infection, and we, therefore, as surgeons are very much more afraid of infections than the average practitioner.

Medical Ideals for the Every-Day Doctor

DR. W. W. ANDERSON, Newport: Every great movement for human welfare in promoting health and vigor has been instigated, advocated and carried to success chiefly by the medical profession to its own great loss, and often in the face of bitter opposition from the people who were to be benefited. No other calling or profession has such a record of constant and unselfish devotion to humanity. The every-day practice of medicine is eminently fitted to make the most of any man if he but give himself devotedly to the work for its own sake. The great men of medicine were just hard, earnest and capable workers. They grew great by growing into the greatness of their task. The every-day doctor must do some specializing. Consultations ought to be more frequent. The greatest opportunities in the healing art to-day are waiting at the hand of the general practitioner. When the every-day doctor has learned to excel himself and others in something, he will begin to experience the pleasure of leadership, the distinction of success, the joy inherent in work well done.

Indications for Prostatectomy

DR. FRANK BOYD, Paducah: The indications for the removal of the prostate are that whenever it interferes by enlargement sufficient to prevent the free and complete emptying of the bladder, from whatever cause, it should be removed.

DISCUSSION

DR. JAMES G. CARPENTER, Frankfort: Early diagnosis of enlarged prostate is everything. If the gland is large and situated high up, it is easily reached by the suprapubic route. If it is a comparatively small fibrous prostate, it can be removed by the perineal route.

DR. CARL WHEELER, Lexington: Residual urine does not always mean enlarged prostate. We may overlook contracture at the vesical neck or hypertrophy of the prostatic fibers at the vesical neck, which is to be differentiated from prostatic hypertrophy by the increased length of the urethra. In hypertrophy of the prostate the patient has an increase in the length of the urethra. Preparation of the patient for prostatectomy has not been touched on. In many instances the renal function is deranged, and the administration of an anesthetic may mean almost certain death. If you introduce a drainage catheter and anchor it, you will see the specific gravity of the urine increase from 1006 to 1020. The albumin in the urine will greatly disappear, but not entirely. The appetite of the patient will improve. The patient will take on flesh. The kidney function will almost be reestablished, and the surgical risk is greatly minimized, and prostatectomy is never indicated until all these things are found out.

DR. JOHN R. WATHEN, Louisville: I have contended that it is far better to operate suprapubically where the prostate is soft, large, of the adenomatous type, rising high up in the bladder. It enables one to make a better diagnosis of other lesions which may be present. The perineal method is indicated in 90 per cent. of the cases.

DR. L. W. BREMERMAN, Chicago: The functional activity of the kidneys should be estimated in every case, not only when prostatectomy is indicated, but when any other operative procedure is contemplated on the genito-urinary tract.

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Early Diagnosis in Malignant Disease

DR. WILLIAM H. WATHEN, Louisville: We are able to make a reasonably early diagnosis of cancer in certain parts of the body, while in cancer situated in other parts we make a very late diagnosis—too late in many instances to do any good by surgical operation. I have operated in numerous cases of cancer of the uterus in the last thirty years, and in many others I have not operated at all. In from 80 to 90 per cent. of the cases it was too late to offer any hope of a permanent cure by operative procedure. We can only offer temporary relief and the prolongation of life of from six months to one year. It is a sad commentary on the intelligence of womanhood and on the medical profession that when we recognize most of the cases of mammary cancer they have progressed too far for any hope of permanent relief.

Early Diagnosis in Ano-Rectal Diseases

DR. J. G. CARPENTER, Frankfort: Early diagnosis in ano-rectal diseases is everything. Too often the physician has accepted what the patient has said with reference to his condition. If a patient will not submit to a proper objective examination, he has no right to be treated. I have seen young children with summer diarrhea in whom there were fissures, hemorrhoids, aphthous ulcerations, proctitis. When the patients were treated by divulsion of the rectum and the use of antiseptics, the summer diarrhea has subsided and these patients have recovered.

Early Diagnosis of Head Injuries

DR. A. D. WILLMOTH, Louisville: In the brain, of all structures, do we have to make an early diagnosis, if we expect to get the best results. This may not mean a surgical result. Many times it means doing nothing. If we would make an early diagnosis, we have to do away with the old classification of concussion and compression of the brain. There is one condition in brain injuries that brings about the entire trouble, and that is increased intracranial pressure. If it be an injury, you may merely have an extravasation of blood as in any other part of the body or tissue, and it causes great disturbance. A good history of these cases will guide one in the subsequent treatment.

Ectopic Pregnancy

DR. HUGH E. PRATHER, Hickman: Abdominal section is the only reliable method for the relief of this condition. Without surgical treatment about two-thirds of the patients die. When rupture occurs the patient may suddenly collapse and fall to the floor, or present symptoms which simulate salpingitis, appendicitis or uterine abortion. Surgical treatment should be instituted as soon as the diagnosis is tentatively established, except when the patients are *in extremis*.

DISCUSSION

DR. W. W. ANDERSON, Newport: Surgery is so safe and swift and sure that we ought to consult the surgeon for diagnosis a great deal oftener than we do.

DR. J. G. CARPENTER, Frankfort: In ectopic pregnancy we should be able to make a diagnosis before rupture. The patient may feel in unusually good health, but suddenly falls over when in the act of doing something and faints, or she is seized with a violent pain in the lower part of the abdomen and says, "I am dying." These, with other symptoms should enable the practitioner to make a diagnosis. With a diagnosis of ectopic pregnancy the patient should be kept in the best possible condition, and when the attachments of the afterbirth are maturing and ready to undergo degeneration, operation should be performed.

DR. J. T. REDDICK, Paducah: When there is a rupture in the early stage of pregnancy, it is small, and the hemorrhage is so slight that one may not be able to make a diagnosis for several hours. I recall one such case in which it was impossible to say whether or not it was a case of ruptured ectopic pregnancy or appendicitis or acute intestinal obstruction.

(To be continued)

MISSISSIPPI VALLEY MEDICAL ASSOCIATION

Annual Meeting, held at Nashville, Oct. 17-19, 1911

(Concluded from page 1558)

Medical Tendencies

DR. ROBERT H. BABCOCK, Chicago: So indispensable have laboratory methods become to-day that one wonders how clinicians of fifty years ago succeeded as well as they did in the diagnosis of any but the commonest affections. Is there not a tendency, along with devotion to laboratory research and animal experimentation, to make the study of pathology outweigh too greatly the application of remedies to the alleviation of disease? In how many schools of to-day do the students receive the instruction in materia medica and therapeutics they did thirty years ago? There is reason for this therapeutic skepticism, but it is a tendency which should not be permitted to grow too rank lest the art of healing be lost in the science of investigation of disease processes. Medical colleges must enlarge their clinical facilities or it may be well to return to the good old custom of each student having a practical training with an experienced preceptor. No one can contemplate present therapeutic methods and contrast them with those of three or four decades ago without recognizing that a momentous evolution is at work.

A national department of public health in all probability is only a question of time. It certainly is in accord with popular education on matters of health and hygiene and the movement springs from the humanitarian desire for the physical betterment of the masses.

Doctors and the People

DR. J. C. WILSON, Philadelphia: The organization of the medical profession but lightly touches the people and the discipline reaches them not at all. There are many people who are wholly indifferent to the medical profession; some who are actively hostile to it. Modern medicine is preventive medicine. To attain its objects, which are the protection of health and life, no effort is too arduous, no problem too difficult. Wherever disease prevails, wherever the death-rate is high, it wants to know the cause in order that the remedy may be applied. It busies itself with water, milk, foods of every kind, even the air we breathe. It goes to the school, the mine, the factory, the shop, even to the very homes of the people to correct the faults that menace health and life through ignorance and neglect. It invokes the law that people may be protected from themselves and from each other. It is in the highest sense educational. It invites reasonable criticism of its methods and results. It should have the interested cooperation of those who reap the benefit of its work.

The Indebtedness of Posterity to the Pioneer Surgeon of the Mississippi Valley

DR. JOSEPH C. BRYANT, New York, in the address in surgery, paid a glowing tribute to Dr. Ephraim McDowell, the first surgeon to perform ovariotomy.

General and Dietetic Treatment of Typhoid

DR. GEORGE DOCK, St. Louis: The efficient preventive treatment now available should be used in camps and in institutions or wherever bodies of people are gathered together under conditions that might make typhoid infection possible. The preliminary use of calomel can be carried out without danger of setting up dangerous diarrheas. It is important to keep up the patient's nutrition to the highest possible point in order to favor recovery of the anatomic lesions. The fuller diet recommended by many recent authorities does not involve any greater danger to the intestinal wall than the administration of milk. A comparatively varied diet can be given without exciting the patient in any way, and the morale of the patient is nearly always distinctly improved by realizing that he is not on the painfully limited diet traditionally given to seriously sick people.

DISCUSSION

DR. CHARLES L. MINOR, Asheville, N. C.: We ought to use all the various means of giving water to our patients, of pushing water on them, having the nurses insist that they

get so much water at a time and as regularly as medicine. I have for the last two years in a number of severe cases, infused my patients, and I have been surprised to see the wonderful effect of a twice-daily saline infusion.

DR. FENTON B. TURCK, Chicago: It is a mistake to inject a large quantity of water into the bowel of a typhoid patient, for the reason that it overstretches the colon, increases the cramps and does not produce a true peristalsis.

DR. JOHN A. WITHERSPOON, Nashville: In my typhoid experience, sweet milk, if given at any stage of fever, and especially after the beginning of the second week, will invariably increase fermentation to the extent that there will be a great deal more gas in the abdomen, and a great deal more flatulency. Then in the stool large masses of curdled milk will be found passing through. Any diet that increases flatulency and fermentation, and that is capable of passing through the intestinal tract in a coagulated form, is not the best diet. I believe in nutrition, but sweet milk, in my judgment, has no place in the treatment and dietetics of typhoid fever. If one gives the patients buttermilk, or broths, or meat juices, or extracts, one will get much better results, and maintain the vitality of the patient better.

DR. L. H. MONTGOMERY, Chicago: I am an advocate of soups and beef-extracts, properly prepared, but I use milk and buttermilk. I give custards and poached eggs, recommend sunshine and plenty of clean sheets and bedding, and general hygienic rules.

DR. ROBERT B. PREBLE, Chicago: The keynote of this discussion is individualization; there are patients who can be fed successfully on sweet milk without disturbance; some can be fed nothing but water and not feel any disturbance, and there are others to whom we may give a liquid diet. But each patient must be handled as an individual, and any man who attempts to treat every patient with a fixed diet that applies to all patients will have a lot of trouble.

Hemorrhage in Typhoid Fever

DR. WALTER F. BOGGESS, Louisville: For the past fifteen years it has been my habit to give every typhoid patient 5 grains salol, 10 grains hexamethylenamin, 20 grains each of subnitrate and subgallate of bismuth, in suspension, every four to eight hours. This is given with a dose of castor oil every three or four days, and normal saline enemata each day, whether or not diarrhea is present. In 223 cases of typhoid fever thus handled not a single one showed any hemorrhage. Three severe hemorrhages occurred in ambulatory patients, and my first visit was during the hemorrhage. I feel sure that this treatment is prophylactic and curative.

As to the treatment of the hemorrhage itself, at first glance, the indications are threefold: first, to put the bowel at rest by lessening peristalsis; second, increase the coagulability of the blood, either local or systemic or both, and, third, to sustain the patient and the after-treatment, which is a matter of some importance. Prophylaxis is a matter of great importance, as obtained by the proper handling and treatment of the patient.

DR. GEORGE DOCK, St. Louis: The first thing to do in such cases is to give the patient enough morphin to quiet him. I have hardly seen one who did not need quieting. When to move the bowels is an important point, and I have come to solve this in a rather empirical way. As long as the patient is comfortable, I often wait three or four days, but if he shows the slightest discomfort in the lower bowel, I do not hesitate to give him an enema, either saline solution, or even soap-suds enema containing castor oil. I think this better, even if a little hemorrhage is started.

Hygienic and Dietetic Treatment of Arterial Hypertension

DR. ARTHUR R. ELLIOTT, Chicago: We must not lose sight of the fact that high blood-pressure is a symptom, not a disease. In the present state of our knowledge hypertension appears to be due to toxemia, certain secondary organic changes, arterial fibrosis and cardiac hypertrophy, following from over functioning of the cardiovascular apparatus produced by the circulatory toxins. The existence of arterial hypertension is not necessarily an indication for treatment. It is difficult often to decide whether we should attempt to lower blood-pressure at all in any given case. A blood-pressure of 200 mm. or higher may be essential to the maintenance of circulatory efficiency. This is true of most cases of chronic nephritis. Again, the symptoms ordinarily attributed to high blood-pressure may be more dependent on disturbance of heart function than on elevated blood-pressure *per se*. Even in matters of diet and hygiene we may by overstrictness impair the patient's strength and reduce his circulatory efficiency. This symptom is encountered alike among the rich and the poor, the thin and the fat. Owing to variation in type and circumstances, it is difficult to lay down any absolute rules to govern diet and hygiene that will be appropriate for any major group of cases.

Preliminary treatment should be directed toward putting the patient in as good general condition as possible, and especially to eliminate toxic factors. Tobacco should be interdicted in severe cases and cases with bad hearts, and strictly controlled in all. Exercise and activities should be regulated on the physiologic level. Such rest should be enforced and periodical "bed weeks" advised in cases of weak hearts. The diet should be individualized according to age, activity, and the state of the heart. Hypertension waves or crises should be combated by rest, starvation or a low diet, of milk and cereals, or bread and fruit with limitation of fluids. Fluids should be restricted in ratio to the amount of urine secreted. Salt restriction is advisable in all cases, and salt withdrawal in every case showing edema, however slight. As these patients are very nervous and impressionable, they should be habitually encouraged and should not be informed of the fluctuations in their blood-pressure.

DISCUSSION

DR. ALFRED C. CROFTAN, Chicago: An important point in Dr. Elliott's paper is that not every case of hyperarterial tension necessarily calls for suspicion or regulation. This is simply a broad rule which applies to almost every morbid phenomenon. It may call for regulation, it may call for suspicion, or it may call for encouragement. A symptom of that kind may be one of the means of defense against disease. As to diet, I have been inclined to the mechanical rather than the chemical side. I try to give these patients a diet which does not distend the stomach and colon unduly with salads, liquids or gas. The diastolic action of the heart is always difficult in these cases, and anything that presses upward on the diaphragm is not good. Hydrotherapy is of the greatest importance.

DR. ROBERT B. PREBLE, Chicago: The successful handling of these cases requires, first, that our knowledge must be more complete than it is now, so that we may be able to direct our patients intelligently. Second, our patients must be sufficiently intelligent to carry out the directions which we give them. Third, the very practical difficulty which we frequently encounter is a question of dollars and cents. These conditions are extremely common among the poor, and it is useless to talk to the average poor patient about these things you would like to have him do that would be for his good.

DR. ALBERT E. STERNE, Indianapolis: In some instances these cases will react to simple mechanical treatment, but in those in which there are manifest cardiovascular changes and commensurately strong central action, systematic venesection is one of the best remedies. It is true that after a comparatively shorter or longer lapse of time the rise in peripheral tension recurs, but systematically carried out I have found venesection in selected cases a valuable therapeutic agent.

The Treatment of Movable Kidney

DR. WILLIAM BILLINGTON, Birmingham, England: I have operated for mobility of one or both kidneys on 345 patients and have performed more than 500 fixation operations. In many instances, I have tried the effect of mechanical support prior to nephropexy. Amelioration of symptoms, when the kidney is efficiently supported, is a strong argument in favor of nephropexy, should the belt fail to give complete relief or be too irksome for permanent employment. Congenital cases of general visceroptosis are unsuitable for operation. Open operation alone insures permanent and complete cure of renal mobil-

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ity. Nephropexy can now be carried out with safety, precision, and permanent success, and there are no surgical reasons why it should not be done in suitable cases. The operation is analogous in all respects to the radical cure of hernia, the same general rules applying to each procedure. Given a patient whose symptoms demand treatment for mobile kidney, the choice between belts and trusses or operation will be determined by the type of displacement, the nature of the symptoms, and the age, occupation, and general condition of the patient.

With regard to my results, I have to record three deaths among 345 patients, a mortality of less than 1 per cent. In 166 of the 345 patients, one kidney only was operated on, while in 179 both kidneys were fixed at the same sitting. The total number of nephropexies is 524. Of the single operations, 130 were on the right kidney and thirty-six on the left. Thirty-three of the patients were males and 312 females. Of the latter, 148 were married and 164 single. My youngest patient was a boy of 14, and my oldest a woman of 70 who suffered from agonizing pains in the right side on the least exertion, the cause of the pain being torsion of the right renal pedicle. Most of my patients were between 35 and 45, but my experience has been that no period of life as altogether immune from the more serious troubles associated with nephroptosis.

Nephroptosis: Its Effect on the Nervous System, with Special Reference to Insanity

DR. C. W. SUCKLING, Birmingham, England: My views are based on twenty years' work and on the observation of over 400 nephropexies performed on 303 patients. I was astounded at the frequency with which I found dropped kidney. I could not help associating the dropped condition of the kidneys with the nervous trouble of which the people complained. I tried various kidney belts, but found they did not keep the kidneys up. I have now had at least 300 cases of operation. I have seen the kidneys, and have observed the changes that take place with age. I have seen the normal kidney, the suprarenal capsules occasionally, but very rarely descending with the kidney, the colon dragged out with the movable kidney, also the duodenum. I have also seen ptosis of the spleen with nephroptosis. I have visited these patients after nephropexy, and have observed the wonderful change in their appearance after a few days. Forty-three of my insane patients treated by nephropexy are cured; five cases are failures, of which two are so owing to bad nephropexy.

Treatment of General Peritonitis, Based on Personal Experience

DR. DANIEL N. EISENDRATH, Chicago: I have had thirty-two cases in seven years with three deaths; twenty-two in the past taree years with two deaths. The causes of death were acute dilatation of the stomach, general sepsis and uremia in one case, phlegmon of abdominal wall in another, and initial general sepsis in the third. One additional patient, who died of pneumonia one month after operation, had been well and up for nearly two weeks. There were ten patients operated on the first day, with no deaths; twelve on the second day with one death; seven on the third day, with one death. In the majority of cases there were no previous attacks due to the organ involved.

The most valuable symptoms are increase in pulse-rate, spreading rigidity and tenderness, persistent nausea and vomiting; uncertain signs or the presence of fluid and absence of liver dulness. The distention comes on too late, as a rule, to be of much value. Fever also is not reliable. The white blood-count was increased in all cases, except the most severe one. Urinary findings are of importance in regard to prognosis.

The peritoneal changes were typical in all cases. In twenty appendicitis cases there was a visible perforation. In eight there was none. Peritonitis was general so far as I could see. Rapid operation is a necessity. The right rectus incision was made in all cases. This is sutured, except a small drain is inserted at the lower angle down to the peritoneum. As soon as the appendix has been removed, or the perforation has been closed, an incision is made just above the pubes and a drain is inserted into the cul-de-sac. A split rubber-tube, well protected, is the best drain. The maximum amount of drainage is obtained in the first twenty-four hours. The high elevation of the patient after operation is essential. No irrigation is resorted to during the operation. Salt solution, 6 ounces, is given every four hours after operation, and this has been found to be plenty and is better tolerated by the majority of cases. The surgeon should watch for complications, especially acute dilatation of the stomach. Abscesses between the coils of intestine will usually take care of themselves or can be opened later if the fever should persist.

Approval of Dr. Wiley's Work and of a National Department of Health

The association put itself on record as expressing its appreciation of the valuable work which has been done and is being done by Dr. Harvey W. Wiley in the enforcement of the Food and Drugs Act. The association also, following the recommendation of the president, Dr. Babcock, in his address, appointed a committee which drafted resolutions urging the importance of establishing a national department of health

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting held Oct. 4, 1911

The President, DR. GEORGE E. DESCHWEINITZ, in the Chair

Hydrophobia

DR. LEONARD D. FRESCOLN: History shows that knowledge of the disease dates back to the time of Celsus. Early ideas of the disease were very crude. Virchow showed the fallacy of its spontaneous origin, and Samuel Johnson called it "a substance, nobody knows what." It is found most commonly in the spring. One writer said it could occur as long as twenty-eight years after the bite. The incubation period is between ten days and one year—generally about six weeks. In Egypt the disease is unknown; in Missouri and Ohio it is common; also in Hamburg and in Saxony. The gross pathology is for the most part similar to that of uremia, or septicemia, or delirium tremens. One case had a ruptured pleura from the convulsions; glycosuria may be found in dogs with the disease. In 1903, Negri noticed degeneration of cortical nerve cells in rabies cases. Among the most striking symptoms now found to be indicative of the disease, are irritability, sensitiveness of the ears to sound, spasm of the pharyngeal muscles, especially when trying to swallow, painful consciousness and later paralysis. It is yet a long road to the complete satisfaction of particularly the laity in the diagnosis and treatment of rabies. Dr. Hunter stated that not one case had been helped in 2,000 years. Ward, in 1809, advised the external use of opium; entrails of insects were used in India to cure the malady, and many superstitious modes of treatment were in vogue. Now we cauterize the wound at once with fuming nitric acid, administer chloral and give the Pasteur preventive treatment as early as possible.

In 1895, eleven persons were given this treatment, and in 1907, 165 in Massachusetts alone. In 1886, there were 2,671 patients treated in Paris, and twenty-five of these died, probably because treatment was delayed; in 1910, there were 401 persons treated and not one died. In 1899, in the District of Columbia, twenty-one persons were bitten, Pasteur treatment instituted, and not one died. There is no case of the fully developed disease in which the patient has ever recovered.

Rabies has been eradicated from Denmark, Norway, Sweden, England (1897) and Switzerland. In Australia there is a six months' quarantine for newly arrived dogs. Pseudolyssa or hysteria resembling rabies, may closely simulate the disease. During the last few years about sixteen persons under our observation were treated, either for the disease or on account of suspicious bite from animals shown to be rabid and having Negri bodies; in one or two cases, Negri bodies were found at autopsy. All persons receiving our treatment escaped the disease. Treatment was given before convulsions developed. The cases seen in the disease terminated fatally. There should be a proper selection of cases and careful institution at once of the best known treatment. About twenty-five treatments of the Pasteur method or required, one a day, as shipped, e. g., from the New York Board of Health; this costs $25. Each bottle should be kept on ice till injected that day.

DISCUSSION

DR. D. J. MCCARTHY: An important point in diagnosis is the period of incubation, which is usually about six weeks. In almost all the spurious cases of rabies I have seen the incubation period was much too early or very much too late. In examining a case of suspected rabies I feel that it is important to work out carefully the question of exposure, history of dog-bite, and to estimate the period of incubation. One condition mistaken for rabies and in which the similarity of symptomatology is marked is enlarged thymus.

DR. HOBART A. HARE: To anyone wishing to investigate the subject of rabies, an instance of interest is the occurrence of an epidemic of the disease in the royal herd of deer near London in 1888. A number were at the Brown Institution, where I saw them with Sir Victor Horsley and Dr. Beavor. The viciousness of the animals, which ordinarily are so gentle, was very marked.

DR. A. P. C. ASHHURST: It is worthy of notice, I think, that in these cases only those patients recovered whose wounds had been treated properly; and that patients whose wounds had not received proper treatment had died in spite of the use of the Pasteur treatment. Dr. Rambaud, head of the Pasteur Institute in New York, asserted that cauterization was useless unless the actual cautery was employed, and he considered bichlorid of mercury (1 to 1,000) the best antiseptic. It has been suggested that lemon juice might be employed in an emergency, as this has been found of value in experimental work. If it was certain that the bite had been inflicted by an animal which was really rabid, a cupping glass should be applied to the wound, or this should be sucked, so as to extract the virus; and its absorption might be delayed by the use of an elastic tourniquet. I should like to ask Dr. Frescoln what method of cauterization he employed in the cases reported.

DR. L. D. FRESCOLN: Fuming nitric acid or crude phenol was used immediately to cauterize.

Compensation by Displacement of the Thoracic Viscera in Pulmonary Tuberculosis

A long abstract of this paper by Dr. Charles L. Leonard appeared in THE JOURNAL, Oct. 21, 1911, p. 1393.

DISCUSSION

DR. HENRY R. M. LANDIS: I should like to ask Dr. Leonard how many cases came to the autopsy table, because even where the clinical results and the roentgenograms have been compared, experience has shown that a different condition is sometimes present. I should also like to ask whether the pneumothoraces were recognized by clinical examination or by the plates only. I should think it would be difficult to detect any displacement of the aorta by clinical means, and I should like to inquire how often the clinical examination of displacement of the aorta coincided with that found in the Roentgen examination.

DR. JAMES M. ANDERS: I was somewhat surprised to hear the statement made that the heart is displaced toward the right four times as often as toward the left in pulmonary tuberculosis. In making physical examinations in cases of tuberculosis, one is led to believe that the heart is displaced toward the left, because the left lung, when retracted, uncovers an increased area of the anterior surface of the heart, giving the impression that the latter is displaced toward the left. This group of cases is readily eliminated by the Roentgen ray. Dr Leonard has pointed out that in the vast majority of cases in which there is displacement of the heart toward the right, the aorta is also displaced; this had not been discovered by the clinician prior to the introduction of the Roentgen-ray method of studying cardiovascular diseases. One reason that the heart is displaced more frequently toward the right than toward the left is doubtless the fact that the hydropneumothoraces are more common on the left than on the right.

DR. CHARLES L. LEONARD: The superficial hydropneumothoraces were discovered by the physical signs only, after the Roentgen examination showed them to be present. The fact that we have the anteroposterior position produced by the heart has led me to believe that in many cases the supposed frequent occurrence of a decrease in the size of the heart in tuberculous cases is due rather to a change in the position of the heart than to a change in the size. As Dr. Anders has said, the drawing away of a portion of the lung from the right has led to the idea of its hypertrophy. I have studied these cases from the roentgenologic standpoint, rather than from that of the internist. We have compared all the cases with the clinical findings, and the result of the roentgenographic findings is what I have presented in my paper.

Book Notices

LEHRBUCH DER THERAPIE INNERER KRANKHEITEN FÜR ÄRZTE UND STUDIERENDE. Band I. Allgemeine Therapie innerer Krankheiten. Herausgegeben von Dr. Paul Krause, Professor und Direktor der Medizinischen Universitäts-Poliklinik in Bonn, und Dr. Carl Garre, Professor und Direktor der chirurgischen Universitäts-Klinik in Bonn. By various authors. Paper. Price, 11.50 marks. Pp. 758, with 345 illustrations. Vienna: Gustav Fischer, 1911.

This is an excellent treatise by some of the more noted clinicians of Germany and promises to be of unusual worth from its thoroughness and practical character. Evidence of the first quality is furnished by the passage which gives the application to the administration of remedies of the more recent facts regarding the absorbability of different substances from the stomach—the first attempt we have seen to make this application. Professor Magnus remarks in this connection that on account of the difficult absorbability of most medicines from the stomach, we are to consider the time which they stay in that organ as lost time and that their action begins only at the time when they are expelled from the stomach into the intestine.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By James M. Anders, M.D., Ph.D., LL.D., Professor of Medicine and Clinical Medicine at the Medico-Chirurgical College, Philadelphia. Tenth Edition. Cloth. Price, $5.50 net. Pp. 1328, with 81 illustrations. Philadelphia: W. B. Saunders Co., 1911.

The present edition of this manual has undergone a more thorough revision than its predecessors, with the addition of much new matter. The list of topics revised or considered the first time includes over forty titles. The attempt to confine the work largely to the more practical aspects of medicine, etiology, diagnosis and treatment makes it possible to present a vast amount of useful information within the compass of a single volume. Still so much condensation becomes necessary that some of the more important topics receive a mere notice. Thus the glycyl-tryptophan test for gastric cancer is dismissed in a line which leaves the student as ignorant as before of its nature or significance. It may be questioned whether such references as this are of any practical value, although, of course, their omission would lay the work open to the charge of incompleteness. On the whole the book is well adapted to meet the needs of the general practitioner who may find here authentic information, well up to date, without discussion of disputed points, for which he may consult other works or periodical literature.

CLINICAL LECTURES ON THE ACUTE ABDOMEN. By William Henry Battle, F.R.C.S., Surgeon to St. Thomas's Hospital. Cloth. Price, $1.50 net. Pp. 107, with 10 illustrations. New York: William Wood & Co., 1911.

These lectures are collected to make seven chapters: I, The Influence of the Appendix Vermiformis and Its Diseases. II, The Treatment of Acute Appendicitis with Peritonitis. III, Pathologic Perforations of the Digestive Tract. IV, Acute Intestinal Obstruction. V, Diseases of the Female Generative Organs. VI, Some of the More Rare Causes of the Acute Abdomen. VII, Some Neuroses Which May Cause Symptoms of Urgency. Many of the conditions discussed are illustrated by case reports, thus adding to the value of the text. Where operation is indicated, the procedure particulary adapted to the case is described in a manner enabling even the tyro to do the operation. The author repeatedly emphasizes his preference for silk sutures and ligatures. He believes that catgut should not be used in acute abdominal cases because it is apt to soften and yield too quickly. He always uses silk.

V. 5
1911

Medicolegal

Members of Board of Health Not Liable for Damages from Fumigation—Construction of Health Laws—Power to Quarantine Against Local and Interstate Points

(Allison vs. Cash and others (Ky.), 137 S. W. R. 245)

The Court of Appeals of Kentucky affirms a judgment holding that the defendant sheriff and members of the Lyon County board of health were not liable for damages sustained by the plaintiff in having her store fumigated, etc. The court says that the laws from which the boards of health derive their powers should be liberally construed that they may not be needlessly restricted in their efforts to preserve the public health; otherwise the health officers would be unable to know their duties and so embarrassed in their performance as to hesitate to act, until irreparable injury has resulted to the public.

In the court's opinion, the power, as for example of the Lyon County board of health to establish quarantine for the benefit of Eddyville against Kuttawa, is impliedly, if not expressly, conferred by Section 2055 of the Kentucky Statutes. But, while the powers enumerated by that section seem sufficient to authorize a county board of health to establish and maintain quarantine in behalf of one city or county against another city or county within the state, such power cannot be exercised by a county board or the state board, as against another state or county thereof, without express legislative authority specifying the conditions and limitations on which such quarantine shall be maintained. In the absence of such legislative authority, the enforcement of quarantine regulations by one state against another would violate the comity that should exist between them and perhaps constitute an interference with interstate commerce.

However, aside from the question of whether the Lyon County board of health exceeded its powers in establishing quarantine against the town of Kuttawa, it clearly had under the general powers conferred by Section 2055 authority to compel the closing of the plaintiff's store for disinfection and likewise to quarantine her, either by requiring her to return to her home in Kuttawa, or be quarantined at some isolated place in Eddyville for the time specified in the notice, as the bringing of her son to the latter place from the infected town of Kuttawa gave her an opportunity to become infected with small-pox, and the leaving of his cast-off clothing in her store afforded danger of infection to her customers. In having her son taken to Eddyville, placing his clothes in the store, and refusing her consent to the temporary closing of the store for disinfection, the plaintiff violated the rules and regulations established by the county board of health and put in force in Eddyville for preventing small-pox from breaking out in that city. In thus dealing with the plaintiff and her property, the defendants not only acted in pursuance of the powers conferred by this section of the statutes, but also in conformity to the rules and regulations of the state board of health.

A board of health is an instrumentality of government created for convenience and invested with such powers as will enable it to protect the general health of the people of the state, county or community over which it is given jurisdiction.

The acts of the defendants complained of in this case did not, according to the proof, constitute in the meaning of the constitution or laws of the state the taking of private property for public use; nor did they result in such an injury to or destruction of the plaintiff's property as authorized a recovery. Fairly viewing the evidence, the acts of the defendants in closing the plaintiff's store, disinfecting her goods, and in requiring her to elect whether she would temporarily return to her home in Kuttawa or be for a stated time quarantined in an isolated place in Eddyville were reasonable and lawful measures adopted by them as members of the county board of health for the suppression of an extraordinary outbreak of small-pox, and were rendered unavoidable by the plaintiff's conduct in violating the regulations established by the defendants, acting as members of the local board of health, in taking her child from the infected town of Kuttawa to Eddyville, and placing his probably infected clothes in her store.

Nor was there any evidence to show that the defendant Cash's connection with the transactions in question put his conduct in a light different from that of the other defendants. As sheriff he merely obeyed the orders of the local board of health in closing the plaintiff's store. This he was bound to do.

It seems to be well settled that a health officer who by statute is authorized to take action for the prevention of the spread of disease is not liable for injuries resulting from such reasonable and customary measures as he may in good faith adopt or direct for that purpose with regard to persons or matters subject to his jurisdiction.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Internal Medicine, Chicago

October 15, 8, No. 4, pp. 417-556

1 *Importance of Tonus for Movements of Alimentary Canal. W. B. Cannon, Boston.
2 *Brill's Symptom-Complex; Typhus Fever; Manchurian Typhus. G. A. Friedman, New York.
3 Correlation of Clinical Progress with Results of Immunological Studies in Pulmonary Tuberculosis. A. H. Caulfield, Gravenhurst, Canada.
4 *Incoagulable Nitrogen of Puncture Fluids, with Special Reference to Cancer. R. S. Morris, St. Louis.
5 *Influence of Temperature on Output of Heart. H. F. Wolf, New York.
6 *Experimental Cardio-Renal Disease. H. A. Christian, R. M. Smith and I. C. Walker, Boston.
7 Modification of Wohlgemuth's Method for Quantitative Study of Activity of Pancreatic Function. P. B. Hawk, Urbana, Ill.

1. Tonus for Movements of Alimentary Canal.—Cannon's observations have convinced him that double provision is made for the establishment of a state of tonic contraction in the alimentary neuromusculature. Almost the entire length of the digestive canal is supplied with extrinsic nerves which, when stimulated, cause an increase of tone and when destroyed leave the canal at first in a toneless state. And if the canal is entirely separated from the central nervous system it has a remarkable power of developing an independent tonic state. When thus isolated, the canal regains its characteristic movements only as it recovers tone. Tonus is therefore fundamental. It supplies the resiliency that causes the state of tension when the canal is filled, or establishes the state of tension when the canal is only partly filled. The state of tension is the occasion for the contraction of viscera which are walled with smooth muscle holding a nerve net. Refractoriness to stimulation during contraction, and gradually increasing irritability during relaxation, result in a rhythmic response to the condition of tension. The most characteristic feature of the movements of the alimentary canal, their rhythmicity, can thus be accounted for.

The view that tonicity of the neuromusculature of the alimentary canal is a fundamental necessity for the appearance of rhythmic movements harmonizes many diverse observations. It accounts for the failure of efficient motility in atonic states of the stomach and intestines. It gives a reasonable explanation for the existence and importance of extrinsic motor nerves. It is in agreement with the observation that tonic contraction and rhythmic peristalsis disappear together in cases of general bodily weakness, when the depleted central nervous system may be supposed to fail to deliver the necessary tonic impulses; it is also in agreement with the observation that worry, anxiety and distress stop gastro-intestinal movements, for such states, accompanied by splanchnic impulses, abolish tonus. It fits admirably with the fact that the stomach of hungry animals is strongly contracted, for then the tonic state makes the organ ready for instant action on swallowed food. Indeed Cannon is inclined to believe that the sensation of hunger results from tonic contraction of the empty stomach. These are only some of the conditions in which the importance of tonus for movements of the alimentary canal is manifested; doubtless other conditions will suggest themselves.

2. **Brill's Symptom-Complex.**—Brill's symptom-complex is regarded by Friedman as being identical with mild and moderately severe cases of typhus fever.

4. **Incoagulable Nitrogen of Puncture Fluids.**—In view of the demonstration of a proteolytic enzyme or enzymes in carcinoma and sarcoma, it occurred to Morris that a ferment, if secreted into a serous fluid, might disclose its presence by an increase in the quantity of incoagulable nitrogen. In all, twenty-five fluids have been available for examination up to the present time. It would appear that a puncture fluid with incoagulable nitrogen below 0.07 gm. per cent. is probably not of malignant origin. There appear to be at least two possibilities, either that a non-carcinomatous fluid occasionally shows a very large amount of incoagulable nitrogen, or that the case was in reality one of malignant disease. Morris says that no explanation of the high incoagulable nitrogen in certain carcinomatous fluids can be given at the present time. It is highly probable, however, that it is the result of the action of a proteolytic enzyme. It is possible, too, that an anti-enzyme may account for the low values met with in some of the cancerous fluids. Both of these points are under investigation. An attempt is also being made to determine whether the application of this method to the blood may be of service in the recognition of malignancy.

5. **Influence of Temperature on Output of Heart.**—The results of Wolf's experiments lead him to assume that the work of the heart becomes greater during fevers, provided that blood-pressure remains constant. As fevers affect not only the peripheral blood-vessels but also those of the heart, the resulting impairment of the nutrition of this organ must become the more severe, the greater the increase in the work of the heart. This fact is of importance in the treatment of infectious diseases, inasmuch as the work of the heart is a product of the heart in a unit of time, in conjunction with the blood-pressure. The work of the heart increases, therefore, with the pulse-rate, the cardiac discharge and the blood-pressure.

6. **Experimental Cardiorenal Disease.**—The interesting and valuable work done by the authors is reported at great length, and as justice cannot be done this study in an abstract, the reader is referred to the original article.

Bulletin of Manila Medical Society

August, III, No. 8, pp. 130-151

9 Spinal Anesthesia. D. M. Molloy, Manila.
10 Progress of Medical Research in Philippine Islands. W. F. Musgrave.
11 The Taon (Infantile Beriberi) Treated at La Gota De Leche. F. G. Calderon, Manila.

Kentucky Medical Journal, Bowling Green

September, IX, No. 17, pp. 731-786

12 Why Should I Belong to the County Medical Society? J. M. Salmon, Ashland.
13 Acute Poliomyelitis. J. S. Lutz, Highland Park.
14 Pellagra. B. K. Menefee, Walton.

Cleveland Medical Journal

September, X, No. 9, pp. 729-794

15 Nature and Transmission of Trypanosomes. O. T. Schultz, Cleveland.
16 *Macroglossia. J. H. Comroe, York, Pa.
17 *Case of Malformation of Heart. E. P. Edwards, Cleveland.
18 Surgical Ideals and Experiences. N. S. Scott, Cleveland.
19 Surgical Application of Pathologic Physiology in Shock. H. G. Sloan, Cleveland.
20 Removal of Steel from Vitreous; Report of Two Cases. W. P. Chamberlain, Cleveland.
21 Medical Aspects of Breast Tumors. W. D. Fullerton, Cleveland.

16. **Macroglossia.**—Immediately after birth, it was observed that Comroe's patient, a girl, at the time of operation 3 years old, had a very large tongue, which appeared to be normal in every other respect. When the teeth began to erupt, the tongue became very much thicker and many small papillæ appeared on the anterior portion. After the first year, both the tongue and the papillæ became rapidly and progressively larger and appeared to take on a bluish color. About one year ago, the entire tongue became quite sore and there developed rather an alarming hemorrhage, which was controlled with some difficulty. Since then there have been several smaller hemorrhages. There has never been much difficulty in mastication and the speech has been fairly distinct. Physical examination showed a robust, well-nourished child of splendid intellect. The swollen and cyanotic lips were bulged forward by a very much thickened, excoriated, violaceous, papillary mass, which represented the anterior portion of the tongue. When the tongue was protruded, it was found that the anterior half of the organ was considerably hypertrophied and was profusely studded with papillæ varying in size from a small pin-head, posteriorly, to a small pea, anteriorly, and separated by many irregular fissures. Many of the papillæ were pustular and the tongue presented a very angry appearance. The posterior half, however, appeared to be not only healthy but of considerably smaller size, such as might be expected in a child of such age. The anterior margin of the tongue, which protruded between the lips, was about 2.5 cm. in thickness and 5 cm. in width. With the teeth in contact, there was a space of about 2.5 cm. between the incisors. The microscopic diagnosis was lymphangioma. Four months after the operation, the tongue, except for some slight thickening, appeared to be quite normal in every respect.

17. **Malformation of Heart.**—At autopsy on Edward's patient the following conditions were found in the heart: Heart and pericardium enlarged. The heart extended from a point to the right of the sternum to the left nipple. The pericardium showed no changes. The heart presented a remarkable appearance. The larger part of the organ seemed to consist of the right auricle. The right heart composed at least two-thirds of the whole organ. The venæ cavæ was large and distended. The right ventricle was not to be made out on inspection. On dissection the following changes were found: The right ventricle was enormously dilated; the walls thin and the musculi pectinati prominent. The foramen ovale seemed entirely closed, but a probe could be passed through the very much thickened septum at one point. The tricuspid orifice and right ventricle were represented by a mere pit in the mesial wall of the auricle below the foramen ovale. This pit was 8 by 5 mm. Leading from the rudiment of a ventricle, along the anterior portion of the aortic ring could be traced a fibrous cord about 4 mm. in diameter, which was evidently the obliterated pulmonary artery, for it was attached to the ductus arteriosus where that vessel joins the branches of the pulmonary. The left auricle was about normal, but the left ventricle was large. The wall averaged 6 mm. in thickness. The mitral and aortic valves showed no changes. The aorta was very large but smooth and elastic. The ductus arteriosus easily admitted a 2 mm. probe and it was continuous with the first branches of the pulmonary artery, so that the blood reached the lungs through it.

Journal of Tennessee State Medical Association, Nashville

October, IV, No. 6, pp. 215-250

22 *Injuries of the Head. D. Eve, Nashville.
23 Post-Abortive Sepsis. C. A. Robertson, Nashville.
24 Significance of Tongue in Diagnosis. H. E. Christenbery, Lonsdale.
25 Sarcoma of Stomach; Report of Case. J. Overton, Nashville.
26 *Two Outbreaks of Typhoid in Institution Traced to Bacilli Carriers. T. Weaver, Nashville.
27 *Need of Reform in Public Schools in Regard to Hygiene and Sanitation. O. Dulaney, Dyersburg.

22, 26 and 27. Abstracted in THE JOURNAL, May 6, 1911, pp. 1354 and 1355.

Surgery, Gynecology and Obstetrics, Chicago

October, XIII, No. 4, pp. 365-480

28 *Use of Silver Wire in Opening Kidney. E. K. Cullen, Baltimore, and H. F. Derge, Eau Claire, Wis.
29 Etiology of Appendicitis. J. D. Robertson, Chicago.
30 Case Illustrating Occasional Advisability of Resecting Tuberculous Glands of Mesentery. K. W. Monsarrat, Liverpool, England.
31 *Operative Versus Conservative Treatment of Certain Forms of Bone Tuberculosis. T. W. Huntington, San Francisco.
32 Diagnosis of Hour-Glass Duodenum. J. Burke, Buffalo.
33 *Blood-Supply of Duodenum. D. P. D. Wilkie, Edingurgh, Scotland.
34 Cesarean Section. A. B. Davis, New York.
35 Consideration of Anatomic Relations of Gut-Tube. N. Ginsburg, Philadelphia.
36 Complications of Appendicitis. J. N. Hall, Denver.
37 Saving the Hundredth Man. W. P. Carr, Washington, D. C.
38 Treatment of Ununited Fractures. N. M. Percy, Chicago.
39 Meckel's Diverticulum; Five Cases of Acute Intestinal Obstruction Due to It. C. E. L. Burman, Pietermaritzburg, Natal, Africa.

40 A Pseudohermaphrodite. T. S. Cullen, Baltimore.
41 *Fracture Clamp for Open Treatment of Fractures. R. Brown, Santa Barbara, Cal.
42 Nitrous Oxid-Oxygen Anesthesia. E. I. McKesson, Toledo, O.

28. **Use of Silver Wire in Opening Kidney.**—From the research made by Cullen and Derge it would appear that in nephrotomy with the silver wire the following represent the main advantages of the wire incision over that of the knife, as obtained in experiments. 1. The amount of bleeding at operation averaged only one-half that observed in the knife incision. 2. The bleeding was readily controlled. 3. There was no postoperative hemorrhage. 4. The resultant infarct was much smaller.

31. **Operative vs. Conservative Treatment of Bone Tuberculosis.**—Huntington is convinced more than ever that the medullary structure, at or near a joint, can, with perfect impunity, be removed in its entirety; this to be followed by complete repair of the resultant bone defect. With added experience and with deepened conviction, he feels warranted in applying this statement to tuberculous disease in other localities than the head of the femur, toward which his efforts were originally directed.

33. **Blood-Supply of Duodenum.**—The supraduodenal artery described by Wilkie supplies what he calls the critical area of the duodenum, the upper two-thirds of the anterior wall of the first part of the duodenum, and the upper third of the posterior wall. Its origin is variable and while in the majority of the cases examined it arose from the upper part of the trunk of the gastroduodenal artery, in other cases it was found springing from the common hepatic trunk, from the right or from the left hepatic branches, or from the cystic artery. In these cases, when injected, it formed a very striking picture and impressed one with the precarious nature of the blood-supply of this part of the intestine. In the majority of the cases injected, the supraduodenal artery had no communication of any size with any other gastric or duodenal artery and the application of considerable force failed to drive the injection beyond this limited area of the duodenum. In these cases the supraduodenal artery appeared to be an end artery. In some cases, however, twigs communicating with the pyloric artery or with the duodenal branch of the right gastro-epiploic artery were plainly visible; the anastomosis was, however, never a very free one. When the supraduodenal artery arises from the gastroduodenal artery it usually takes the form of a short trunk, which, arising on a level with the upper border of the duodenum, soon ends by dividing into a spray of branches giving a characteristic fountain-like appearance, the branches for the most part arching over to the front of the duodenum. In three cases the supraduodenal vessel was of large size and ran outwards along the upper border of the duodenum for several inches, sending numerous branches to both its anterior and posterior walls.

In four of the forty injected cases, there was definite evidence of old duodenal ulceration, undiagnosed before death. In one case this was so definite as to have produced a marked stenosis of the first inch of the duodenum. In three of these cases the scars of the ulcers were situated on the anterior wall of the duodenum in the area supplied by the supraduodenal artery and the branches of this vessel could be traced into the scar tissue and appeared to have little or no anastomotic connection with other duodenal vessels. The origin of the supraduodenal artery in these three cases is of interest. In one case it arose from the left hepatic branch, in another from the common hepatic trunk and in the third case it was represented by two vessels, both arising from the right hepatic branch and running vertically downwards. In the fourth case the scar was situated on the upper border of the duodenum ½ inch from the pylorus. In this case injection of the celiac axis artery, without ligature of its branches, failed to inject the first ¾ of an inch of the upper border of the duodenum, even after considerable force had been applied and left an area of pallor in the apparently healthy duodenal wall around the scar.

On dissecting this specimen, a small supraduodenal artery was found arising from the gastroduodenal artery. It sent only one small branch to this pale area which also received a small twig from the pyloric artery. Whatever be its point of origin, the artery soon divides into several branches. One of these, a small one, usually runs upwards in the gastrohepatic omentum; the larger branches descend to the anterior wall of the duodenum, one or more small branches going to the upper part of the posterior wall. In several cases a ligature was applied to this vessel and the celiac axis artery was then injected. In these cases an uninjected area was left and this corresponded almost exactly to the limits of the critical or ulcer-bearing area. In the majority of cases a second artery was found, springing from the gastroduodenal about ½ inch above its bifurcation and supplying the posterior wall of the first part of the duodenum and sometimes reaching to its second part. This vessel, though not constant, was generally present and Wilkie calls it the retroduodenal artery. The lower third of the anterior aspect of the first inch of the duodenum is supplied by a branch which, arising from the right gastro-epiploic artery or from the superior pancreaticoduodenal artery, turns upwards about ¼ of an inch to the right of the pyloric vein of Mayo.

41. **Clamp for Open Treatment of Fractures.**—The clamp devised by Brown is made from a single piece of metal of good tensile strength and flexibility. His preference is for Russia iron, though silver, vanadium steel and aluminum are serviceable. The clamp consists of two long parallel bands tapering at the lower ends and joined at the upper ends by a cross bar. There are two or three other cross bars equidistant from each other, the lowest somewhat above a point one-half way down on the parallel bands. The cross bars are elevated 1/32 to 3/32 of an inch above the parallel bands on one surface. Each end of the upper cross bar is perforated in such manner as to allow the passage of the corresponding long bands when bent circular. The clamp is made in various sizes adaptable to any of the long bones.

Journal of Medical Association of Georgia, Augusta

October, I, No. 3, pp. 75-116

43 *Simple Technic in Gynecologic and Obstetric Perineal Repair, Incomplete and Complete. R. R. Kime, Atlanta, Ga.
44 Treatment of Pellagra. H. F. Harris, Atlanta.
45 Sambon's New Theory of Pellagra and Its Application to Conditions in Georgia. S. R. Roberts, Atlanta.
46 Gastric Intestinal Disorders in Pellagra. J. C. Johnson, Atlanta.
47 Clinical Analysis of Pellagra. S. R. Roberts, Atlanta.
48 Malaria: Report of Some Cases of Irregular Remittent Malaria. H. C. Whelchel, Douglas.
49 Antityphoid Vaccination in U. S. Army. C. H. Halliday, U. S. Army.
50 Case of Empyema. A. W. Simpson, Washington.
51 Eyestrain. O. H. Johnson, Athens.
52 Obscure Appendicitis; Report of Cases. J. P. Proctor, Athens.
53 Conservation of Health. T. D. Coleman, Augusta.
54 Warning Concerning Use of Salvarsan. W. C. Slusher, Bluefield, W. Va., and E. B. Burchell, New York.

43. Abstracted in THE JOURNAL, June 10, 1911, p. 1754.

New York Medical Journal

October 21, XCIV, No. 17, pp. 813-860

55 *Experimental Poliomyelitis, Produced in Monkeys from Dust of Sickroom. M. Neustaedter and W. C. Thro, New York.
56 Salvarsan Treatment of Syphilis. G. F. Lydston, Chicago.
57 Syphilis of Anorectal Region. L. H. Adler, Philadelphia.
58 Comparison of Results Obtained by Intravenous Administration of Acid and Alkaline Solutions of Salvarsan. G. M. MacKee, New York.
59 Action of Salvarsan on Eye and Ear. F. P. Hoover, Jacksonville, Fla.
60 Ear Complications of Exanthemata. T. L. Saunders, New York.
61 Tuberculosis of Both Ears Cured by Tuberculin. J. S. Cipes, Albuquerque, N. Mex.
62 *Treatment of Fracture of Shaft of Femur. J. Douglas and J. N. Drury, New York.
63 Case of Aneurysm of Thoracic Aorta Treated by Abram's Method. L. C. Boyd, Long Beach, Cal.

October 28, XCIV, No. 1717, pp. 861-908

64 Relation of Biophysical Laws of Osmosis to Nasal Vasomotor Processes. J. Wright, New York.
65 Present Status of Vivisection in Medical Profession. M. J. Clurman, New York.
66 Etiologic Factors of Purulent Chronic Otitis Media. S. M. Smith, Philadelphia.
67 Acute Otitis Media. G. L. Richards, Fall River, Mass.
68 Comparative Merits of Various Methods Employed in Operations for Septal Spurs. J. B. Kanter, New York.
69 Statistical Review of Work of Tuberculosis Clinics of Department of Health for 1910. B. H. Waters, New York.
70 Dental Radiography. M. K. Fisher, Philadelphia.

55. **Experimental Poliomyelitis.**—A number of additional observations are cited by the authors which they believe prove their theory that: (1) Poliomyelitis is propagated by dust. (2) That the nasopharynx probably is the point of entry. (3) Acute poliomyelitis is both infectious and contagious. It becomes perfectly evident that prophylactic measures should be most rigidly carried out in order to check the spread of this disease.

62. **Treatment of Fracture of Femur.**—The purposes of Drury's splint in fractures of the shaft of the femur are: 1. To obtain the maximum amount of extension with the least amount of weight attached to the Buck's extension apparatus. 2. To tell at a glance the amount of extension maintained by the Buck's extension. The splint is made of ¼-inch soft pine wood, and consists of two sections—the upper part, of a thin, box-like arrangement a little more than ⅜ of an inch wide; the lower part of a long ¼-inch board, which slides into the upper part, with a foot piece extending at right angles.

Before applying the splints the legs are measured and the amount of shortening of the injured leg is noted. The Buck's extension apparatus is applied, first using moleskin plaster. Next, coaptation splints are applied around the thigh at the seat of fracture. The splint is now applied, the upper box-like part extending from the axilla downward to the seat of fracture, and firmly bandaged to the body and upper part of the thigh. The lower part of the splint consisting of a long ¼-inch board which projects into the upper part for at least 2 feet, is now firmly bandaged downward from the seat of fracture to the foot, each part being bandaged separately. Extension is now made on the Buck's apparatus, and the lower part of the splint slides downward from the upper part, carrying with it that part of the thigh and leg below the seat of fracture. To maintain this amount of extension, sufficient weight is attached to the rope of the Buck's apparatus extending over a pulley at the foot of the bed. After the muscular spasm wears off, the amount of weight may be decreased without interfering with the amount of extension.

Medical Record, New York

October 21, 80, No. 17, pp. 809-858

71 Specialism in Medicine. E. B. Cragin, New York.
72 *Results in Two Cases Treated by Vaccine Therapy. C. L. McDonald, Cleveland.
73 Tonsillectomy; Special Reference to Quinin Anesthesia. B. D. Sheedy, New York.
74 *Method of Treatment of Empyema in Young Children. J. H. Kenyon, New York.
75 Diagnostic Value of Use of Sphygmomanometer in Examinations for Life Insurance. J. W. Fisher, Milwaukee, Wis.
76 *Concentric Progressive Diminution of Area of Liver Dulness in Differentiation of Free Gas in Peritoneal Cavity from Abdominal Tympanites. H. W. Berg, New York.
77 Practical Consideration of Hyperchlorhydria and Hypersecretion. C. S. Fischer, New York.
78 Prophylaxis of Oropharynx and Nasopharynx. J. H. Guntzer, New York.
79 Case of Aspirin Poisoning. D. I. Macht, Baltimore.

October 28, 80, No. 2138, pp. 859-908

80 Psychanalysis and Correction of Character. E. W. Scripture, New York.
81 *Why Is the Apex the Point of Election in Tuberculosis of Lungs? T. G. McConkey, San Francisco.
82 Arc Light in Medicine. A. D. Rockwell, New York.
83 Electrical Treatment of Arterial Hypertension. J. H. Burch, Syracuse, N. Y.
84 Vaccine Therapy in Acute Rheumatic Polyarthritis. W. C. Wolverton, Linton, N. Dak.
85 *Albumin Reaction of Sputum in Pulmonary Tuberculosis. M. Fishberg and D. Feiberbaum, New York.
86 Three Cases of Brain Abscess. J. Frank and G. B. Hassin, Chicago.
87 *Methylene-Blue Test of Urine of Cancer Patients. J. R. Verbrycke, Washington.

72. **Vaccine Therapy.**—McDonald cites the histories of two cases of chronic infection which were quickly cured with the aid of vaccine therapy. In both cases other treatment had failed. They were both due to the *Staphylococcus albus* and were treated with stock vaccines prepared by the author.

74. **Treatment of Empyema in Young Children.**—Kenyon reports good results following his method of treating empyema in young infants. He opens the pleural cavity along the aspirating needle, making an opening so small that it will just permit the introduction of a rubber drainage tube, so inserted as to let as little pus as possible escape. This tube is a long one and is connected with a bottle of warm saline fluid so arranged that the fluid is aspirated into the chest, and dilutes the pus. The operation is very simple and quick, and is not accompanied by shock. The apparatus causes no discomfort to the child, and the escape of the pus is slow and does not cause a pneumothorax. There is little leakage around the tube and mixed infection is avoided. Convalescence is shorter than usual, and drainage is efficient.

76. **Differentiation of Free Gas in Peritoneal Cavity.**—Berg has found that free gas in the peritoneal cavity, as contradistinguished from tympanitic distention of the abdominal hollow viscera, is shown by the substitution, for the area of liver dulness and flatness, of a tympanitic resonance, rapidly progressing synchronously from above downward, and from below upward, the last to disappear being the mid-area of liver flatness.

81. **Point of Election in Tuberculosis of Lungs.**—According to McConkey, if the fact that tuberculosis of the lungs is secondary to pleural involvement is once appreciated, it will not be difficult to understand why such a very large percentage of pneumonia and pleurisy cases eventually terminate in phthisis. The bacilli contaminating the serum or lymph which lubricates the pleural surface are usually phagocyted or prevented from getting a lodgment on the pleura when the phagocytes have a chance to attack them in this thin film of lymph. The apex is peculiar in this: It has only its own scant lymph transudate which is immediately carried below by gravity. This effect of gravity will be more pronounced in those with a "peaked" apex.

85. **Albumin Reaction of Sputum in Pulmonary Tuberculosis.**—The authors submit a report on the results of the chemical examination of the sputum in cases of pulmonary tuberculosis in the wards of the Montefiore Home. Many of the patients have been in this institution for several years, one even as long as twenty-four years, so that the diagnosis, if made, is quite reliable. On the whole, their results do not confirm Roger's statements to the effect that in every case of tuberculosis the sputum gives a positive albumin reaction. They found some cases of undoubted tuberculosis in which careful analysis of the sputum gave negative results. In forty-two specimens of sputum showing the presence of tubercle bacilli, the albumin test was also positive. It has been their experience that the number of bacilli present in the field has no relation to the amount of albumin found by the chemical test. Some specimens of sputum showing an enormous number of bacilli had only a faint trace of albumin, which was sometimes so slight as to render it altogether doubtful whether the reaction was positive. It appears that the activity of the process has considerable influence on the intensity of the chemical reaction. In active, progressive cases the amount of albumin is greater than in quiescent or healing cases. In fibroid cases the amount is often infinitesimal, or entirely absent. Three cases of tuberculosis, with bacilli in the sputum, which gave negative results at the first examination for albumin, reacted positive at a subsequent one. The lesion in the lungs in all these three cases was rather quiescent, the fibroid changes being quite marked. Seven cases of unquestionable tuberculosis, but in which tubercle bacilli were not found when the sputum was examined, gave a positive albumin reaction, two only faintly. There were also three cases of tuberculosis, with tubercle bacilli in the sputum, and the very specimen giving positive results bacteriologically reacted negatively as regards the albumin reaction. One of these was a case of abdominal malignant growth with general metastases (confirmed by autopsy) and with a complicating pulmonary tuberculosis with bacilli in the sputum. Of the cases of pulmonary emphysema examined, two gave a positive albumin reaction and three were negative. Of five cases of bronchial asthma the sputum was negative in all, while one case of asthma complicated by emphysema and cardiac dilatation reacted positively. The sputum was also positive in two cases of Pott's disease.

87. **Methylene Blue Test of Urine of Cancer Patients.**—Verbrycke is emphatically of the opinion that this test cannot even be credited with giving contributory evidence when positive; nor is a negative reaction of any worth.

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Boston Medical and Surgical Journal

October 26, CLXV, No. 17, pp. 629-668

83 Open-Air Schools. D. Snedden, Boston.
89 Open-Air Rooms and Schools. T. F. Leen, Boston.
90 Replies to Circular Letters Concerning Fresh-Air Rooms and Out-Door Schools, Sent Out by Associated Tuberculosis Committees of Massachusetts Medical Society. J. B. Hawes, Boston.
91 *Brown-Séquard's Epilepsy in Guinea-Pigs. L. B. Alford, Palmer, Mass.
92 *One Hundred and Fifty-Eight Cases of Heat Prostration Treated at Boston City Hospital, July 2-13, 1911. W. D. Reid, Boston.
93 Heat Prostrations. I. C. Walker, Boston.
94 Progress in Ophthalmology, 1911. E. W. Clap, Boston.

91. Brown-Sequard's Epilepsy in Guinea-Pigs.—A very extended series of experimental observations was made by Alford on this question and he reports his findings at great length. When watched in their cages the scratching reactions of so-called "epileptic" guinea pigs are seen to be intense, prolonged and poorly coordinated, and to occur more frequently than in normal animals. Preventing this scratching by removing its most potent exciting factor, viz., the body lice, prevents the appearance of "epilepsy" in newly-operated animals and causes it to disappear in animals already "epileptic." The value of section of the sciatic nerve seems to be wholly in the incoordination of movement in the posterior limb that results and causes the scratching reactions to be ineffective. Ineffectiveness of scratching produced by other measures, as, for instance, by removal of the claws of the hind feet, has the same effect. The "epileptogenous" area may be increased in extent in the posterior direction by interfering with the movements of the head. The explanation of the fact that "epileptic" guinea-pigs scratch on stimulation while normal animals do not may be either that the frequent repetition of the scratching movements has made them the reaction of choice in place of struggling attempts, or that disturbances in the skin have made it impossible for the animal to distinguish between stimuli of various sorts. The "complete attack" or convulsion is regarded as a reflex phenomenon in which it is possible to recognize the elements of the scratch reflex somewhat distorted by the disturbance of reciprocal innervation. This conception receives some support from the facts (a) that spinal irritants such as strychnin and caffein increase the ease with which convulsions may be elicited and the severity of the convulsions themselves, while the reflex depressant, alcohol, markedly decreases both these factors; and (b) that operations which increase the spinal reflex irritability, i. e., removal of some or all of the nervous centers above the medulla, also facilitate the convulsions. With regard to the localization of the mechanism of Brown-Séquard's "epilepsy" in the nervous system, it has been found (a) that convulsions are present after removal of all the centers above the pons; (b) that they may be obtained from the pons, medulla and cervical portion of the cord when these structures are isolated; and (c) that they may also be obtained from the dorsal and lumbar portions of the cord after high dorsal section. As far as can be determined, the tracts of the cord that are involved are those of voluntary motion. The scratching reaction during anesthesia is regarded as the result of stimulation by the anesthetic of the same nervous mechanism as is involved in the "complete attack." The presence of "epilepsy" in the offspring of "epileptic" animals, Alford says, may be explained in other ways than by assuming inheritance, but Brown-Séquard's "epilepsy" cannot as yet be related to epilepsy in man.

92. Heat Prostration Treated in Boston City Hospital.—The treatment employed in these cases varied according to the kind of case. Exhaustion Type.—Dry rub, blankets, sometimes heaters, ice bag to the head and stimulation according to the individual case. Whiskey, aromatic spirits of ammonia, caffein and strychnin and occasionally epinephrin were used. Prostration Type.—Ice cap, ice pack, cold pack or sponge bath, according to the temperature, and rest in bed with moderate stimulation as above if there were signs of weakness. Heat-Stroke Type.—Here there are four indications: (1) Reduction of temperature, (2) maintenance of cardiac action, (3) control of convulsions, (4) treatment of complications. (1) Tub baths and ice packs were the choice in combating the high temperature. If the heart action was poor, the ice pack was always used as the patient need not be moved so much. Ice water enemata were used in a few instances, but as a rule a proper use of external measures seemed sufficient. (2) Maintenance of cardiac action often required stimulation of a heroic type, mostly hypodermically, as the patients were generally unconscious. Generous use of atropin was practiced for pulmonary edema, and strychnin, camphor and various forms of shock enemata were directed at the failing heart. (3) Convulsions were so frequent in the heat-stroke cases that it became the practice towards the end of the so-called epidemic to administer morphin and sometimes hyoscin with the plan of repeating the morphin in case convulsions nevertheless developed. (4) The treatment of complications as they occurred varied in no way from cases in which they were the primary disease. About five of these unconscious men required catheterization for retention of urine.

New York State Journal of Medicine, New York

October 11, No. 10, pp. 451-504

95 Certain Phases of Diagnosis by Means of Cystoscope and Cysto-Urethroscope. L. Buerger, New York.
96 Hematologic Factor in Causation of Uterine Hemorrhage. A. Sturmdorf, New York.
97 Essay on Man. M. B. Downer, Woodstock, N. Y.
98 Cancer. W. Jones, Rochester, N. Y.
99 *Operations for Adherent Retrodisplaced Uteri by Shortening Round Ligaments Through Inguinal Canal After Abdominal Section Through Transverse Incision. L. Broun, New York.
100 *Olive Oil in Postoperative Nausea. C. R. Hyde, Brooklyn.
101 *Auscultation of Cough. A. H. Garvin, R. Brook, N. Y.
102 Relationship of Tabes to General Paralysis. E. D. Fisher, New York.
103 *Chronic Appendicitis; Postoperative End-Results. E. M. Stanton, Schenectady, N. Y.
104 *Significance and Therapy of High Blood-Pressure. J. F. Rooney, Albany, N. Y.
105 Value of Eye in Diagnosis of Pathologic Conditions. T. Dixon, Brooklyn.
106 Plan to Improve Medical Expert Testimony. S. W. Little, Rochester, N. Y.
107 Errors in Diagnosis. E. B. Kaple, Elbridge, N. Y.
108 *Diagnosis and Surgical Indications of Duodenal Ulcer. J. T. Pilcher, Brooklyn.
109 Retropharyngeal Abscess, Its Diagnosis and Treatment. M. J. Levitt, Brooklyn.
110 Case of Meningococcic Meningitis in Three-Months-Old Infant Successfully Treated with Flexner Serum. A. Spingarn, Brooklyn.
111 Gunshot Wounds of Abdomen. E. A. Van Veer and J. L. Bendell, Albany, N. Y.
112 Opposition Against Reform of Medical Onomatology by New Medical Dictionary. A. Rose, New York.
113 Some Factors in Operative Technic and Management Which Make for Success or Failure. W. B. Chase, Brooklyn.

99 and 108. Abstracted in THE JOURNAL, May 6, 1911, pp. 1351 and 1352.

100, 101, 103 and 104. Abstracted in THE JOURNAL, May 20, 1911, pp. 1504, 1505, 1506 and 1507.

Bulletin of American Academy of Medicine, Easton, Pa.

October, XII, No. 5, pp. 253-342

114 *To What Extent Are Suicide and Other Crimes Against Person Due to Suggestion from Press? H. B. Hemenway, Evanston, Ill.
115 *Neurotic Books and Newspapers as Factors in Mortality of Suicide and Crime. E. B. Phelps, New York.
116 *The Press and Crimes Against Person. F. Fenton, Mt. Holyoke, Mass.
117 *Newspapers and Crime. W. S. Wadsworth, Philadelphia.

114, 115, 116 and 117. Abstracted in THE JOURNAL, July 22, 1911, pp. 311 and 312.

Journal of Minnesota State Medical Association and Northwestern Lancet, Minneapolis

October 15, XXXI, No. 20, pp. 481-506

118 Conditions Other Than Appendicitis in Right Iliac Fossa. W. A. Dennis, St. Paul.
119 Report of Special Tuberculosis Commission Appointed by Minnesota State Board of Health. W. J. Marcley, Minneapolis.
120 Mental Defective and His Relation to Criminality. O. H. Wolner, St. Cloud.
121 Toxemia of Pregnancy. L. W. Day, Minneapolis.

West Virginia Medical Journal, Wheeling

October, VI, No. 3, pp. 111-146

122 Medicine and Organization. C. A. Wingerter, Wheeling.
123 Trend of Modern Psychiatry. A. P. Herring, Baltimore.
124 Iodin Method of Skin Sterilization. J. E. Cannaday, Charleston.
125 Melena Neonatorum. C. D. Holland, Fairmont.
126 Pellagra; Report of Two Cases. T. R. Evans, Charlottesville.
127 Fibroma of Thigh. G. D. Jeffers, Parkersburg, W. Va.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London

October 14, No. 2630, pp. 869-960

1 Auricular Fibrillation. J. Mackenzie.
2 Aspects of Medicine as a Profession. J. T. J. Morrison.
3 A Large Fibrocystic Tumor Distending the Buttock. J. D. Malcolm.
4 *Congenital Diaphragmatic Hernia Associated with Embryonic Organs. L. Rawes.
5 Conveyance of Electricity Through Solids, Liquids and Gases and Production of Radiation. Sir O. J. Lodge.
6 Ionic Medication and Theory of Ions. H. L. Jones.
7 Roentgenotherapy of Ringworm. J. Hall-Edwards.
8 Therapeutics of Radium. W. D. Butcher.
9 Radium in Rodent Ulcer and Other Skin Conditions. J. H. Sequeira.
10 Action of Filtered Radium Rays When Applied Directly to Brain. Sir V. Horsley and N. S. Finzi.
11 Diathermic Treatment of Circulatory Disorders. F. Nagelschmidt.
12 Roentgenotherapy of Malignant Disease. E. R. Morton.
13 Treatment of Certain Diseases of Alimentary Tract by Roentgen Rays Combined with Internal Administration of Metallic Silver. F. Hernaman-Johnson.
14 Fractures Undiagnosable Except on Roentgen-Ray Examination. C. F. Bailey.
15 Pyelography and Use of Collargol in Diagnosis of Diseases of Urinary Tract. W. I. Bruce.
16 Differences in Appearances of Phthisical Chests as Shown Before and After Treatment. W. B. Knobel.
17 Radium Water Therapy. W. Armstrong.
18 Radium Emanation and Physiologic Processes. S. Saubermann.
19 Treatment of Chronic Adhesive Processes in Middle Ear. M. Yearsley.
20 Diagnostic Value of Suction Syringe in Maxillary Antral Sinusitis. P. Watson-Williams.
21 Dysphagic Conditions Wrongly Attributed to Esophageal Spasm. W. Hill.

4. Congenital Diaphragmatic Hernia.—Rawes' patient was a baby which lived only twenty hours after birth. The following conditions were found at the necropsy: The right lung was small, measuring about 3 inches by 1 inch, the greater part of that side of the chest being empty. The left lung was extremely small and resembled a large raisin, the whole organ being about the size of a half-penny; filling the remainder of the left side of the chest was the stomach and the whole of the small and large intestine, with the exception of the descending colon and rectum. The small intestine was empty and massed together; the large bowel contained meconium, which could be expressed per anum. The greater curvature of the stomach was directed upward with the posterior surface of the organ lying anteriorly, so that the whole viscus was "upside down." The appendix was normal and measured 1½ inches. The heart was small and pushed over to the right side, although lying in close apposition to the left lung. The liver was normal in size and position. The pancreas and left kidney were bound down together in the left renal region. Both kidneys resembled a small walnut in size and presented a rough fissured surface. There was a large opening in the center of the left side of the diaphragm (with a smooth rounded edge), which would admit three fingers quite easily.

Lancet, London

October 14, CLXXXI, No. 4598, pp. 1055-1116

22 Past Work of Obstetrical Society of London and Obstetric and Gynecologic Problems Still Awaiting Solution. A. Routh.
23 *Intracranial Murmurs in Their Relationship to Tinnitus Aurium. T. B. Hyslop.
24 *Intestinal Hemorrhage in Typhoid and Its Relation to Agglutinating Power of Blood. H. Whitehead.
25 Acute Middle-Ear and Mastoid Inflammations. S. F. Snow.
26 *Ophthalmo-Reaction of Calmette in Early Diagnosis of Paralysis. A. S. Hosford.
27 *Researches in Epilepsy. D. M. Alexander.
28 Case of Acute Antrum of Highmore with Eye Complications. J. R. Foster.
29 Rupture of an Empyema Into the Esophagus. W. A. Bullough.

23. Intracranial Murmurs and Tinnitus Aurium.—Some facts and theories pertaining to intracranial physics and pathology which may, in part, serve to explain the origin of some of the entacoustical phenomena which may be appreciable not only subjectively by the patient as tinnitus, but also objectively by the observer as intracranial murmurs, are presented by Hyslop. He says that in cases in which the sheath of the auditory nerve is affected by an increase of pressure in the lymphatic fluid, direct stimulation of the nerve may cause subjective phenomena somewhat similar to those occurring in connection with the visual sense when the specific energy of the visual apparatus or tracts is irritated and manifested by symptoms ranging from scintillating scotomata to mere sparks of light or pressure phosphenes. Hyslop believes that such direct stimulation is rare except in cases in which degeneration of the auditory nerve is taking place. Another point to be noted is that, although pulsatile tinnitus is common, rarely do we have evidence of similar pulsatile phenomena in connection with any other of the cranial nerves which, in all probability, would be subject to somewhat identical conditions of influence. The point to recognize is that the fluid from the subarachnoid lymph spaces, when forced from the brain by increased intracranial blood-pressure, not only passes into the perilymphatic space of the labyrinth and thereby tends to modify the pressure of the endolymph, but it also serves as a more direct conducting medium for sound vibrations arising in connection with the pulsatile or other movements of the brain.

There are three different kinds of brain movements: (1) Pulsatile movements communicated from the pulsations of the large basal cerebral vessels; (2) respiratory movements, in which the brain rises during expiration and falls during inspiration; and (3) vascular elevations and depressions which alternate and are due to periodic dilatation and contraction of the blood-vessels. This last is a peristaltic arterial movement, regulated by the vasomotor center, and occurs from two to six times per minute. It is in connection with one or other of these movements that sound vibrations are apt to occur in the arterial, venous or lymphatic systems. The pulsatory movements of the brain are exceedingly interesting, and undoubtedly they most frequently give rise to intracranial murmurs. From the circle of Willis the arteries ascend and their currents are directed upward in the same direction as the venous currents. The large arteries at the base of the brain communicate a movement to it, each pulse wave raising it up and thereby compressing the cerebral veins. In expiration the venous blood is dammed back into the sinuses and the brain expands at the expense of the cerebrospinal fluid. During inspiration the veins are emptied by suction action, the brain collapses and the cerbrospinal fluid re-enters the cranial cavity. During these movements the cerebrospinal fluid is subjected to doubly compensatory movement, i. e., the pulsatile movement is mainly intracerebral and is concerned mainly with the passage of the fluid through the cerebral tissues and the ventricles, and the respiratory movement which is concerned mainly with the flow of the fluid to and from the cranium. Thus, it is that the vascular mechanism of the brain determines not only the intracerebral, arterial and venous movements, but it also serves to give a peristaltic movement to the ventricles of the brain, whereby the cerebrospinal fluid is slowly passed onward. Excess of cerebrospinal fluid within the cranium is not, as a rule, attended by tinnitus.

Anemia and hyperemia are powerful agents in modifying pressure equilibrium. The high arterial pressure which occurs in Bright's disease is attended by undue pressure on the peri- and endolymph, and gives rise to tinnitus. In hemicrania due to gout the intracranial arteries may be dilated or hyperextended, and by their more forcible action not only drive the cerebrospinal fluid from the cranial cavity, causing increased tension in the labyrinth, but, by the same process, force the brain toward the internal table of the skull and thereby render it possible for the pulsatile waves to come into almost direct contact with it. So it is in conditions of plethora culminating in apoplexy, of which tinnitus is an early symptom. Tinnitus is often a prominent and distressing symptom in anemia and chlorosis. From certain anatomic and clinical data there appears to be no doubt that intracranial venous murmurs may occur in the same way.

24. Intestinal Hemorrhage in Typhoid.—Whitehead cites cases to prove that intestinal hemorrhage gives rise to an increased formation of agglutinins in the blood lasting for a short time, which may help to tide the patient safely over a dangerous period. As a result of his investigations, Whitehead

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recommends that, in many toxic cases of typhoid, and more especially in those in which the blood gives a poor agglutination reaction, phlebotomy to the extent of about 10 ounces (according to the physical condition of the patient) be tried as a treatment.

26. **Ophthalmo-Reaction of Calmette in Early Diagnosis of Phthisis.**—Hosford has never obtained a positive result, except in true cases, nor did he see any bad results whatever from the use of the test as regards the eye. If a patient in a suspicious case fails to give a reaction, then, he says, the test should be applied on three different occasions, with an interval between each application of from three to four weeks.

27. **Researches in Epilepsy.**—Attempts to produce an epileptic animal and researches on the blood and urine by Alexander gave uniformly negative results with one exception. There appears to be a relationship between the fit and a low urea-ammonia ratio.

Practitioner, London

October, LXXXVII, No. 4, pp. 469-596

30 *Flatulence. Sir R. W. Burnet.
31 Pruritus Ani. Sir F. Wallis.
32 *Measles. Sir J. F. H. Broadbent.
33 Burns and Scalds. Sir L. H. Ormsby.
34 Dysmenorrhœa. G. F. Blacker.
35 Common Ailments of Eye. A. Lawson.
36 Croup. F. J. Poynton.
37 *Backache. C. Berkeley.
38 Cuts, Bruises and Sprains. R. H. A. Whitelocke.
39 *Biliousness. W. S. Fenwick.
40 Hiccough. J. W. Carr.
41 Intestinal Worms. E. Cautley.
42 Renal Pain. C. Wallace.
43 *Morbid Blushing. H. Campbell.
44 Hemorrhoids. P. L. Mummery.
45 Epileptic Fits. G. Johnston.
46 Profuse Sweating. C. N. Meachen.

30. **Flatulence.**—Ascertain the predisposing cause, says Burnet, and put the patient, if possible, on such a plan that he will gradually be able to eat all wholesome, though probably for a time, at least, very simple and light, articles of diet without discomfort and with great benefit to his general health and well-being. The less he comes to think of his diet and the more he is able, as time goes on, to forget his former flatulence and distention, the happier and better he will be. At first, no doubt in most cases the diet will have to be carefully chosen and somewhat restricted. A rather dry diet will be found to suit best in nearly all cases, little liquid being allowed with meals. This excludes all soups and broths at the beginning of a meal and allows of only a small quantity of fluid toward the close of the meal. What the special drink should be has to be decided in each particular case. Some will be best with plain water, others may require a little stimulant, alcohol in some form. Tea must be limited in quantity and must be freshly made. As a source of flatulence the excessive use of tea among well-to-do people should always be borne in mind. Animal food is, as a rule, best digested by these patients; it must be carefully selected and well, though plainly cooked—underdone rather than overdone. Much green vegetable will usually not be well borne, and what is given should be rubbed through a sieve, cooked as spinach is served. Often it is best to forbid potato, for a time, and to substitute toast or second day's bread. Farinaceous foods have to be given carefully and the effect watched, but where digestion by the stomach is chiefly at fault, starchy foods, as they are dealt with chiefly in the intestines, may be given in greater amount.

Nux vomica is one of the most useful remedies in these cases and it may be given in tincture, or in pill, with ¼ grain of capsicum and 2 grains of compound rhubarb pill. Bismuth is of use in many instances, with an alkali such as bicarbonate of sodium and calumba or other bitter infusion. Salicylate of sodium with liquor pepticus, nux vomica and spirits of chloroform seems useful in a certain number of cases. Extract of malt given with or just after meals helps in those cases in which the digestion of starchy foods is obviously difficult. A few drops of dilute hydrochloric acid in water shortly after meals is often decidedly beneficial. In some cases iron and quinin seem to be indicated. A pill which is often well borne consists of 1 grain of reduced iron, with extract of nux vomica, quinin and pillula rhei compositus. It acts as a tonic and also as a mild aperient. It may be varied by 1 grain of pepsin and 1/20 grain of arsenious acid in place of the quinin and it is useful in anemic subjects. Calomel in very small fractional doses, given twice daily for a few days at a time, has often very good effect, and where there is sluggish action of the liver, 1 or 2 grains of blue pill with colocynth and hyoscyamin, or pillula rhei compositus should be given occasionally and followed, if necessary, by a mild saline in the morning, but anything like strong purgation should be avoided. When the distention is chiefly in the bowels, salicylate of bismuth, betanaphthol and salol, in cachet, give at least temporary relief. Lavage is not usually needed in these cases, but if there is much accumulation of mucus it is very helpful by clearing the stomach and thus giving a fair start to other treatment. In acute attacks of flatulence, hot water, with aromatic spirits of ammonia and spirits of chloroform with perhaps a teaspoonful of brandy, often relieves the tension and spasm. Sometimes a drop or two of oil of cajeput in mucilage has a very good effect.

32. **Measles.**—Good nursing is considered as of the greatest importance by Broadbent. Drugs are seldom required, he says, except for complications, which must be treated as they arise. For healthy children properly cared for in good homes an attack of measles for the most part runs a normal course and does not give rise to serious anxiety or call for special treatment. It is the neglect of precautions in the prodromal stages, the ignorance of the parents, the absence of proper care and treatment and the insanitary nature and surroundings so frequently met with in the homes of the poor which are mainly responsible for the high mortality.

37. **Backache.**—In searching for the cause of backache Berkeley says one must consider the vertebral column, the vertebral joints, the sacro-iliac joint, the coccyx, the spinal cord, the spinal membranes, the muscles of the back, the abdominal viscera, the aorta and the pelvic viscera. In addition, backache is found to be associated with the acute specific fevers and with neurosis.

39. **Biliousness.**—In no diseases, says Fenwick, is the employment of calomel and other mercurial preparations more abused, and it is highly probable that the daily recourse to calomel, which is such a common practice, produces extreme irritation of the duodenal mucous membrane. On the other hand, a dose of calomel or mercurial pill once a week followed by a saline the next day, always affords temporary relief to the nausea and giddiness. During an attack of febrile jaundice, due to acute cholangitis, the patient must remain in bed on a bland liquid diet. Tonics of all kinds are veritable poisons and only alkaline mixtures should be prescribed to relieve the symptoms of the secondary gastric and intestinal indigestion. The question of surgical interference should always be considered when clinical evidence points to the existence of gall-stones, chronic pancreatitis or duodenal ulcer.

43. **Morbid Blushing.**—The essential cause of morbid blushing in Campbell's opinion is an inherited morbid temperament. Drugs have little effect on it. The bromids are, on the whole, the most useful. Mild galvanic currents applied to the cervical sympathetic may do some good, but probably rather by suggestion than by their direct effect. The vasomotor centers of the face are readily affected by digestion: witness the liability to redden in the fact ofter taking food. Hence, a further need for paying attention to the digestive system in the subjects of morbid blushing. These patients may gain some confidence by using strong convex glasses. The artificial myopia thus induced by blurring the surroundings tends to diminish self-consciousness. Psychic methods are of undoubted value. Correct the patient's morbid outlook on life and to achieve this end it is necessary to get into close mental touch with him. Above all give him confidence.

Australian Medical Journal, Melbourne

September 2, I, No. 7, pp. 67-76

47 Mentally Defective Children. A. Davidson.
48 Acute Parotitis with Orchitis, Followed by Insanity. W. H. Harker.

September 9, I, No. 8, pp. 77-86

49 Case of Cavernous Angioma of Face. G. McCallum.

September 16, I, No. 9, pp. 87-98

50 Treatment of Visceroptosis. A. Honman.
51 Prolapse of Uterus. T. Murphy.

Journal of Tropical Medicine and Hygiene, London

October 2, XIV, No. 19, pp. 285-298

52 Water-Supply of Towns in Tropics, Chiefly from Bacteriological Standpoint, as Illustrated by Water-Supply of Khartoum. A. Balfour.

Annales des Maladies des Org. Génito-urinaires, Paris

September 1, XXIX, No. 17, pp. 1537-1632

53 *Syphilis of the Bladder and Upper Urinary Passages. (Syphilis de la vessie et des voies urinaires supérieures.) N. A. Mikhailoff.
54 Primary Tuberculosis of the Bladder. (De la cystite tuberculeuse primitive.) G. Lf Virghe.

53. **Syphilis of the Bladder.**—Mikhailoff's patient was a woman of 39, the wife of a physician, who applied for relief from a sensation of weight in the kidney region and periodical hematuria which had been observed for five years. The kidney and other organs were apparently normal and she had borne a healthy child thirteen years before. The cystoscope revealed hyperemia in parts of the bladder, and around both ureter mouths there were small papules like those of impetigo; groups of the papules resembled roseola on the skin. The Wassermann test was applied twice, the first time with negative and then with positive results; under a course of mercurial pills and potassium iodid conditions were rapidly restored to normal.

Annales de Médecine et Chirurgie Infantiles, Paris

September 15, XV, No. 18, pp. 561-592

55 *Tuberculosis of the Testicles in Children. (Tuberculose testiculaire chez l'enfant.) P. Vignard and L. Thévenot.
56 Invagination of the Intestine. (Invagination intestinale; désinvagination. Guérison.) H. Triboulet and M. Savariaud.
57 Three Cases of Tuberculous Rheumatism. S. Veras.
58 Favorable Influence of Mountain Climate on Eczema in Infants. (Influence favorable de la cure d'altitude sur l'eczéma des nourrissons.) A. B. Marfan.

55. **Tuberculosis of the Testicles in Children.**—In one of the three cases reported, an infant of 14 months died six months after the first symptoms of tuberculous disease of the left testicle. Another child of 11 months died a week after removal of the tuberculous testicle. The tuberculosis in this case was primary. The third child was over 12 years old and the testicle had been giving trouble for a month and a half before the epididymectomy which put an end clinically to the local trouble. A review of the literature confirms this same predominance of infants among such patients. Of Jullien's seventeen, all but twelve were under the age of 2. The onset may be sudden and acute, the symptoms suggesting acute gonorrheal orchitis, but these subside in a few days leaving suppuration which soon forces its way outward. In other cases the onset is slow and indolent and the trouble is unsuspected until revealed by chance or an abscess ruptures.

Archives Générales de Chirurgie, Paris

August, V, No. 8, pp. 841-960

59 *Neurotomy for Obliterating Endarteritis. (Névrotomie pour endartérite oblitérante.) Marquis.
60 Solitary Cysts in the Bones and Fibrous Ostitis. (Kystes solitaires des os et ostéite fibreuse.) P. Mauclaire and Burnier.

59. **Neurotomy for Endarteritis.**—Marquis reports two cases in which he successfully severed the nerves and put an end to the intense pain accompanying gangrene. In the first case the lesion was in the leg and the neurotomy is, he says, the sixth of the kind on record on the leg, while his other case is the first on record in which the operation was done for gangrene on the hand. He has been able to find in the literature only nineteen cases of gangrene on the hand for which neither syphilis nor diabetes was responsible. Conditions in the arm are so complicated by the anastomoses between nerves that a very complex operation would be necessary to ensure a complete cure. In his case the gangrene continued to spread, thus involving new nerves, with recurrence of pain after two weeks of freedom from it, and the patient died before the month was out. Marquis outlines the technic necessary in such cases to prevent recurrence of the pain.

Archives des Maladies de l'App. Digestif, Paris

August, V, No. 8, pp. 409-468

61 *Swallowing of Air in Connection with Acute Dilatation of the Stomach. (La distention aigue de l'estomac avec occlusion duodénale. Le rôle de l'aérophagie dans sa pathogénie.) A. Mathieu.
62 Absorption by the Large Intestine. (Sur l'absorption par le gros intestin.) G. Dliena.
63 Polycythemia with Predominating Dyspeptic Symptoms. (Cas de polycythémie rouge—maladie de Vaquez—avec symptomes dyspeptiques prédominants.) Wasserthal.

61. **Acute Dilatation of the Stomach with Duodenal Occlusion.**—Mathieu remarks that the discovery of the causes and remedy for this condition, which used to prove fatal in 75 per cent. of those affected, is one of the greatest triumphs of modern medicine. The main feature of the trouble is the immense distention of the stomach and upper part of the duodenum with its attendant symptoms and complications. The dilated portion stops abruptly where the mesenteric artery crosses and compresses the duodenum, and Mathieu shows in diagrams how any excessive distention of the stomach pulls down on the mesentery below the duodenum, thus tightening the pressure on the duodenum and starting the dangerous vicious circle. But, Mathieu queries, what starts the acute dilatation of the stomach, especially after operations? The syndrome has been observed in three cases of eclampsia and in cases in which exclusively medical measures had been applied, without any anesthetic. Consequently there must be some other causal factor in the syndrome besides the anesthetic, to which it is being universally ascribed. This factor, he asserts, is the swallowing of air; Lardennois has reported eight cases in which this fact was established beyond question. In one case he noticed that the patient after appendectomy, being tormented by thirst and dryness of the throat was constantly swallowing saliva and the air swallowed with it was progressively distending the stomach and causing great uneasiness. The condition was evidently the first phase of the dire "arteriomesenteric occlusion of the duodenum." When he explained to the patient the danger to which she was exposing herself, she ceased this insistent swallowing and conditions soon righted themselves, as also in his seven other cases of the kind. Mathieu was called once in consultation in a similar case of commencing dilatation of the stomach, and he introduced a cork between the patient's teeth whenever she began to retch, regurgitate or hiccough, thus preventing swallowing of air by keeping the mouth open. Improvement of the threatening symptoms was soon evident and by the second day all trouble from this source was at an end. The patient said afterward that the gag, the lavage of the stomach and the saline infusion had all helped in the cure, but above all the removal of the basin which had seemed to invite her to retch and try to vomit. The aerophagia, Mathieu affirms, is thus the primal factor in all these surgical and medical cases—the trouble having been observed even during convalescence from typhoid fever. There is no doubt a predisposition on the part of the stomach, some toxic or other cause weakening the stomach walls so that they yield more readily to the strain from the air swallowed in excess by the restless, nervous patients. The pressure from within may even close the cardiac orifice so that it may be impossible to introduce the stomach sound. Only in such an event need operative measures be considered, and they should be restricted to a minute gastrostomy to permit escape of the gases. In the eight cases on record in which a laparotomy was done and the stomach incised, the patients all died.

Archives de Médecine des Enfants, Paris

September, XIV, No. 9, pp. 641-720

64 *Functioning of the Kidney in the Course of Nephritis in Children. (Les fonctions rénales au cours des néphrites de l'enfance.) P. Nobécourt and P. Merklen.
65 Day Nurseries in Russia. (Les crèches en Russie.) W. Chenguellidze.
66 Diphtheria Bacillus-Carriers. (Diphtérie et porteurs de germes.) J. Michel.

64. **Nephritis in Children.**—Nobécourt and Merklen report research on acute nephritis in children, especially the simple albuminuric form, of which they report three typical examples, three of the form with retention of chlorids, and one with retention of nitrogen, as also a case combining these forms. They also analyze ten other cases of these various

types in a chronic form. Study of the elimination of albumin, chlorids and nitrogen allows the course of the kidney affection to be traced and explains the transient character of many cases of acute nephritis with great tendency to edema, and it also explains the tolerance of the children to certain forms of chronic nephritis. There may be phases of retention of chlorids in chronic nephritis, each simulating an acute disease. This intermittence is one of the features of nephritis in children. Nobécourt and Merklen expatiate on the advantages of a milk diet even when there is no retention of salt and urea; they found that the albuminuria was milder and briefer during scarlet fever when the children were restricted to milk for a time. If the albuminuric nephritis enters a chronic phase, a milk-vegetable diet is necessary, with yolks of eggs and very little meat, moderately salted. With retention of salt in acute nephritis, the children should be restricted to water and little of that for the first few days. The edema is generally rapidly reabsorbed when this is done. Even milk contains enough salt to prolong and intensify the edema during this phase. Salt should not be allowed until certain that the kidneys are able to eliminate it again. These dietetic measures may be supplemented by diuretics, such as lactose and theobromin or digitalis if the heart action is weak. In nephritis with retention of urea, they restrict the children to lactosed water, and avoid all albuminous substances until the permeability of the kidney for urea is restored. While milk is the main reliance in acute nephritis, it is not nourishing enough in the subacute and chronic cases, and it should be supplemented by unsalted food or food poor in nitrogen, according as the tests of kidney functioning point the way.

Lyon Chirurgical, Lyons

October, VI, No. 4, pp. 377-492

67 The Pyloric Vein. (Anatomie de la veine infra-pylorique.) A. Latarjet.

68 *Stenosis of the Pylorus of Tuberculous Origin. (Tumeur inflammatoire sténosante du pylore d'origine tuberculeuse. Rapports de l'inflammation avec l'hypertrophie et les tumeurs du tissu musculaire lisse.) J. Challer and L. Nové-Josserand.

69 *Exclusion of the Duodenum and of the Pylorus. R. Leriche and E. Bressot.

68. Stenosis of the Pylorus of Tuberculous Origin.—Necropsy of a patient succumbing to chronic pulmonary tuberculosis revealed muscular thickening of the pylorus without any specific tuberculous changes, yet inoculation of guinea-pigs with scraps of tissue from this neoproduction resulted in the death of the animals from tuberculosis. This is the first case of inflammatory specific tuberculosis of the pylorus with positive inoculation of guinea-pigs. In adults fibrous or sclerous stenosis of the pylorus has only rarely been examined for tuberculosis; if this were done oftener, lesions suggesting inflammatory tuberculosis would certainly be found in many instances. The structure of the thickening in this case resembled so much that of myoma of smooth muscle tissue that it suggests the possibility that inflammation (tuberculous in this case) may be at the basis of true tumors (a benign leiomyoma in this case). The structure of the stenosis in this case resembled so closely the lesions encountered in the stenosis of the pylorus from muscular hypertrophy in the new-born, that it suggests a possible similar origin in the latter cases.

69. Exclusion of the Duodenum.—Leriche and Bressot describe the history of the operations excluding the pylorus and duodenum and the preferable technic, and then review fifty-nine cases, including two from their own experience; they also know of fifteen other cases without details. By exclusion of the duodenum they mean cutting the pylorus across and closing each stump with a suture, reestablishing the continuity of the digestive tract by a gastro-enterostomy. For exclusion of the pylorus, the operation has to be done on the stomach tissue proper and is thus more difficult than the simple severing of the duodenum at the pylorus, as the raw surfaces are more extensive. All the patients derived great benefit from the operation and no death is recorded. Jonnesco has performed the operation twenty-nine times without a fatality. The outcome is so good after exclusion of the duodenum that they insist that this should be the routine treatment for gastric or duodenal ulcer. They denounce this operation in cases of gastric cancer—this requires more radical measures—but with gastric ulcer exclusion of the duodenum should be given the preference over pylorectomy (on account of the difficulty of the technic) and over gastro-enterostomy (on account of the inadequacy of the effect from this alone). The details of forty-five cases are given in full.

Lyon Médical, Lyons

September 3, CXVII, No. 36, pp. 469-516

70 Variability of the Blood-Vessels Supplying the Kidney. (Recherches sur les organes du pédicule rénal.) A. Challer and A. Jaliffier.

September 10, No. 37, pp. 517-564

71 Fatal Pneumothorax Complicating Thoracocentesis. Bouchut and Bouget.

Revue de Gynécologie, Paris

July, XVII, No. 1, pp. 1-96

72 Outcome of Ninety-Four Conservative Operations on Ovaries and Fallopian Tubes. (Les résultats des opérations conservatrices pratiquées sur les trompes et les ovaires.) W. L. Jacobson.

73 Rupture of Vessels with Abdominal Contusions. (Des ruptures vasculaires dans les contusions abdominales. II.) Ducuing and Florence. Concluded in No. 3.

August, No. 2, pp. 97-192

74 *Formation of Vagina by Autoplastic Technic. (De la création d'une cavité vaginale par la méthode autoplastique dans les cas d'absence congénitale.) S. Pozzi.

75 Anatomy of the Kidney. (Recherches sur le hile, le sinus et le pédicule du rein.) A. Challer and A. Jaliffier.

74. Autoplastic Formation of Vagina.—Pozzi describes with numerous illustrations a successful operation of the kind on a young woman and the anatomic outcome six months later.

Revue de Médecine, Paris

September, XXXI, No. 9, pp. 673-760

76 *The Toxic Origin of Neurasthenia. (De la neurasthénie grippale.) H. Bernheim.

77 Primary Bilateral Cancer in the Adrenals of Young Women. (Cancer primitif et bilatéral des capsules surrénales avec metastases viscerales et cranniennes.) F. Mouisset and J. Challer.

78 Treatment of Tuberculosis in Antiquity. (La phtisiothérapie dans l'antiquité. Orientaux, Grecs, Arabes.) M. Piéry and A. Rémy.

79 *Connection Between Hysteria, Renal Insufficiency and Retention of Salt. (Hystérie, insuffisance rénale, retention chlorurée.) J. Lépine.

76. Grippal Neurasthenia.—Bernheim reports twenty-three cases to illustrate the various forms of neurasthenia which influenza is liable to induce, in addition to its action on various organs. He is inclined to regard ordinary neurasthenia as an auto-intoxication, often constitutional, continuous or periodically recurring, and influenza may be the means of arousing this tendency to develop into actual neurasthenia. The symptoms of neurasthenia are refractory to suggestion, and they may persist for weeks or months or pass into a chronic stage with remissions and exacerbations, but the spinal and cerebral symptoms of neurasthenia only exceptionally merge into actual organic disease; persisting neuritis, tabes, myelitis or dementia are extremely rare as a consequence of neurasthenia or influenza.

79. Hysteria and Kidney Insufficiency.—Lépine's patient was an intelligent man of 51 suffering from traumatic hysteria which finally subsided. Study of this case and of the experiences of others seems to indicate that every hysteria has a toxic element, and that this can be sought on the part of the kidneys. This view explains the aggravation of conditions liable when there is retention of salt. This patient's serum contained twice the normal proportion of salt, and he finally succumbed to uremia.

Semaine Médicale, Paris

October 11, XXXI, No. 41, pp. 481-492

80 The Indirect, Psychic or Conditional Reflexes. (Les réflexes conditionnels en physiologie et en pathologie.) F. Rose.

Berliner klinische Wochenschrift

October 9, XLVIII, No. 41, pp. 1829-1872

81 *Anemia in Infants. (Anämien des frühsten Kindesalter.) H. Finkelstein.

82 *Arteriovenous Anastomosis for Angiosclerotic Gangrene. (Behandlung der angiosklerotischen Gangrän der unteren Extremität mittels arteriovenöser Anastomose.) J. M. Glasstein.

83 Determination of Antitrypsin in the Blood-Serum. (Prognostische und diagnostische Bedeutung der Antitrypsinbestimmung im Blutserum.) G. Katzenbogen.

84 *The Colloidal Nitrogen in the Urine as Sign of Cancer. (Bedeutung einiger urologischer Befunde für die Diagnose der malignen Epithelialtumoren.) L. Caforio.
85 Forensic Aspect of History of Venereal Disease in Candidates for Matrimony. (Besteht nach der deutschen Rechtssprechung zwischen Heiratskandidaten eine Pflicht zur Offenbarung überstandener Geschlechtskrankheiten?) J. Heller. Commenced in No. 40.

81. **Anemia in Infants.**—Finkelstein remarks that the blood will often be found normal when the pallor of the infants suggests anemia. On the other hand, some infants are born with less than the normal reserve of iron to carry them along through the nursing period, as milk contains very little iron. This chlorotic type of anemia in nurslings has been described mostly by French writers. In Germany infants are given mixed foods earlier, and in consequence they get iron in time to prevent development of the anemia. The prematurely born and twins, and infants of frail, anemic and neuropathic mothers, do not have this normal reserve of iron. In such cases the lack of iron usually can be compensated by giving the child iron or mixed food, but in a certain proportion of cases there seems to be a constitutional weakness of the blood-producing apparatus. In a case of this kind in a male infant, both the mother and grandmother had a constitutional tendency to anemia. Hygienic-dietetic measures are the reliance in treatment, adding a little meat juice, cheese or half an egg, or fruit juice, vegetable soup, etc., to the milk. This generally answers the purpose, but if not a little saccharated ferrous carbonate, twice a day, generally is sufficient in the primary forms. With secondary anemia, removal of the cause is the first task, and blood tonics do more harm than good until this is done. His experience with pseudoleukemic anemia in infants seems to demonstrate that it is the extreme type of secondary anemia from toxic or infectious causes in children with a congenital debility of the blood-producing organs. If it is possible to keep the infant in pure air and free from complications with proper care and diet, the prospect of a cure of the pseudoleukemic anemia is good. Only in the uncomplicated cases and those in which iron has been given, does the anemia seem to respond favorably to arsenic.

82. **Arteriovenous Anastomosis for Gangrene.**—Glasstein reports a case of angiosclerotic gangrene of the left leg requiring amputation. Two years later the right leg became extremely painful. Persistence of the pains for eight months with chilliness of this leg, the livid tint and extreme tenderness, suggested impending gangrene, and when two cyanotic patches developed at the base of the great toe and no pulse could be detected in the popliteal, posterior tibial and dorsalis pedis arteries, the patient, a man of 38, consented to arteriovenous anastomosis at the root of the thigh. The Carrel technic was applied and in less than a month all pains had subsided and the foot was nearly of normal tint. When the patient was last seen, five months after the operation, complete function was restored and the leg had a normal aspect. He had been accustomed to smoke fifty or sixty cigarettes a day and was somewhat addicted to alcohol.

84. **Colloidal Nitrogen in the Urine in Cancer.**—Caforio investigated the urine of twenty-eight cancer patients and of twenty-two others to test the constancy of the increase in colloidal nitrogen which Salkowski thinks is specific for cancer. Caforio found the sign positive in pulmonary tuberculosis and liver disease as well as in cancer so that it is not pathognomonic for cancer, but negative findings are useful to exclude malignant disease. He never found the range above normal in the healthy or those free from organic disturbances, while it ran up to 7 per cent. with cancer even in the incipient stage, and subsided to normal range after the cancer had been excised.

Deutsche medizinische Wochenschrift, Berlin

October 5, XXXVII, No. 40, pp. 1825-1872

86 *Tuberculin by the Mouth. (Stomachale Anwendung von Tuberkulinpräparaten.) B. Möllers and W. Heinemann.
87 *Exhaustion of the Epinephrin-Producing System by Muscular Work. (Das chromaffine System und seine Erschöpfung durch Muskelarbeit.) W. Carl.
88 *Appendicitis and Colitis. H. Tölken.
89 Volvulus of the Cecum with Gangrene. H. Riese.
90 *Inflammatory Tumors in Abdominal Wall. (Ueber entzündliche Bauchdeckengeschwülste.) E. Heymann
91 *Summer Infant Mortality a Housing Problem. (Die Sommersterblichkeit der Säuglinge, ein Wohnungsproblem.) J. Rietschel.
92 *Examination of the Thymus. (Zum physikalischen Nachweise der Thymus.) K. Basch and A. Rohn.
93 Roentoscopic Diagnosis of Foreign Bodies in the Eye. (Doppelte-Perforation des Auges und Nachweis durch Röntgenstrahlen.) J. Jung.

86. **Inefficacy of Tuberculin by the Mouth.**—Möllers and Heinemann report extensive experimental research confirming the uncertain action of tuberculin administered internally, as the pepsin and trypsin in the digestive tract have a destructive influence on the specific elements of the tuberculin. The method is thus totally unfit for diagnostic purposes and even for treatment on account of the unreliability of the dosage, as it is impossible to calculate the amount that will eventually be absorbed.

87. **Exhaustion of "Chromaffine System" by Muscular Exertion.**—Carl says that the substance taking the chrome stain in the medulla of the adrenals, the paraganglia and the carotid gland—the apparatus called the "chromaffine system"—disappears in the frog under the muscular exhaustion from protracted reflex convulsions in strychnin poisoning.

88. **Appendicitis and Colitis.**—Tölken has been examining for evidence of colitis in all cases of appendicitis in his charge, and has found colitis more common than he expected. Circumscribed colitis and catarrhal conditions elsewhere in the large intestine are liable to prevail alone or as complications of appendicitis. The physiologic stagnation of the feces in the cecum naturally predisposes to inflammation in this region. Palpation shows a more extensive resistance than with appendicitis alone, and the tenderness is not so limited or so extreme as in the latter affection while the temperature, pulse and leukocyte count are nearer to normal range. In cases colitis is diagnosed, castor oil may show that operative treatment is not required.

90. **Inflammatory Tumors in Abdominal Wall.**—Heymann refers to a tumefaction years after a herniotomy which healed by primary intention. The slow development of the lesion suggests a malignant tumor, but examination always reveals some scrap of suture material as the primal cause. In a case reported in detail the tumor was evidently connected with the urachus and excision confirmed this assumption and the slight virulence of the germs causing the tumor-like infiltration. He advocates extensive excision.

91. **Heat Stroke as Factor in Summer Infantile Mortality.**—Rietschel argues that hitherto attention has been devoted too exclusively to the infant's food while the infant itself has been disregarded in our study of infantile mortality. He has found the mortality highest in the cities and in the hottest parts and in the hottest houses and rooms, and he has become convinced that the heat is an extremely important factor. It debilitates the children so that they feel any slight digestive disturbance far more severely and succumb more readily. The campaign against infant mortality is thus seen to be essentially a housing problem. He says that until the population began to accumulate in the cities, an excessive summer mortality among infants was known in Germany only from the reports in American literature, so that cholera infantum was long called the "American disease." Not until about 1870 did it attract attention in Germany, coincident with the industrial development and the migration to the cities. Among the arguments he presents for this view are that sterilizing the milk has not materially reduced infantile mortality, while the mortality fluctuates with the temperature, and especially with the temperature in the room where the child lives—this effect of heat may be evident even in winter, in overheated rooms. He adds that no one has been able to discover any actually toxic bacteria in milk, and if such were present they would proliferate just as well at 24 C. as at 30 C. He regards the morbidity as an actual heat stroke in many cases, or the heat may act as a chronic debilitating influence. Keep the milk cool, certainly, he says, but keep the baby cool first and foremost.

92. **The Thymus.**—Basch and Rohn use a special pleximeter with very narrow hammer for percussion with auscultation,

and state that it is thus possible to determine the outlines of the thymus even in infants, especially when combined with auscultation on friction of the region. In their examination of 140 children they found the normal outline of a rhomboidal shape, extending from the clavicle to the second or third rib, and bounded by the margin of the sternum and parasternal line. They give the area of dulness thus determined as compared with the necropsy findings in a number of cases. The area varies characteristically with the age and state of nourishment and with pathologic conditions in the vicinity.

Deutsche Zeitschrift für Chirurgie, Leipsic

September, CXI, Nos. 1-6, pp. 321-630

94 *Local Anesthesia for Operations in Area of Fifth Nerve. (Lokalanästhesie bei Operationen im Trigeminusgebiet.) H. Braun.
95 Chronic Obstruction of Common Bile Duct; Four Cases. (Hydrops und Empyem der Gallenwege beim chronischen Choledochusverschluss.) F. Brunner.
96 Muscle Hernia. (Muskelhernien.) Heinemann.
97 Idiopathic Extreme Fragility of the Bones in Brother and Sister. (Zur Frage der Osteopsathyrosis idiopathica.) J. Hartmann.
98 Fracture of Cuneiform Bone of the Carpus. (Frakturen des Os triquetrum; spez. die Ulnar-Dorsalflexionsfraktur mit Absprengung des Proc. styl. ulnae.) F. Deneeke.
99 Cause of Retrograde Incarceration of the Intestine. (Pathogenese der retrograden Inkarzeration des Darmes.) E. Polya.
100 Trauma of Upper Cervical Vertebræ. (Beitrag zu den Verletzungen im Bereich der beiden ersten Halswirbel.) F. W. Brill.
101 Traumatic Aneurysm of Intestinal Artery After Abdominal Contusion. (Traumatisches Aneurysma einer Darmwandarterie als seltene Folge einer Bauchverletzung durch stumpfe Gewalt. Tötliche Blutung aus dem Aneurysma in der siebenten Woche nach dem Unfall.) H. Lang.
102 Connection Between Gall-Bladder Lymphatics and Pancreas. Beziehungen der Gallenblasenlymphgefässe zum Pankreas.) C. Franke.
103 Curability of Liver Abscesses. (Zur Heilbarkeit multipler cholangitischer Leberabszesse und über kleine solitäre Leberabszesse und ihre Bedeutung in der Chirurgie.) C. Lehmann.
104 Pathology of Kidney Calculus. (Zur Pathologie der Nierensteine.) H. Rosenbach.
105 *Vagotomy in Treatment of Tabetic Gastric Crises. (Ein neues Operationsverfahren bei tabischen Crises gastriques.) A. Exner.
106 Transplantation of Bone for Defect in Lower Jaw. (Klinischer Beitrag zur Frage der freien Knochentransplantation bei Defekten des Unterkiefers.) J. Vorschütz.
107 Ligation of Innominate Vein. (Unterbindung der Vena anonyma.) W. Kluge.

94. Technic for Local Anesthesia of the Trigeminus.—Braun gives illustrated descriptions of ten different operations in the area innervated by the fifth cranial nerve for cancer or other serious lesion, all done under local anesthesia, blocking the main nerve-trunks. He declares that the advantages of local anesthesia are more evident in this than in any other field of surgery. The technic is somewhat similar to that of Schlosser's deep injections of alcohol for relief of trigeminal neuralgia, but it includes further the direct blocking of the nerve-trunks by injecting the anesthetic around it and infiltration of adjacent tissues, preceded by injection of morphin or morphin-scopolamin. One of the illustrations shows the total resection of the upper jaw and evacuation of the orbit for cancer in a man of 63, more than half of the face thus being opened up in a single yawning wound. There was very little bleeding, although the carotid was not ligated. The patient did not have to go to bed afterward and was strolling in the garden the next day. It is startling in one of the illustrations to meet the intelligent pain-free gaze of the patient, a man of 64, who was having a cancer of the base of the tongue, tonsil and fauces and the glands in the left side of the neck removed through the single large opening. Half of the tongue and jaw had just been cut out when the photograph was taken. Resection of the upper jaw, Braun adds, has lost its horrors under local anesthesia, and become an entirely different operation, as at any point elsewhere. With good local anesthesia and the patient quieted by morphin beforehand, the psychic influence of being a witness to the operation does not seem to disturb; its importance has been overestimated, Braun declares. The aim is to render the entire field free from pain without injecting directly into the diseased tissues.

105. Vagotomy for Tabetic Gastric Crises.—Exner severed the tenth, eleventh and twelfth dorsal roots to relieve tabetic gastric crises in a man of 47 and the pains were banished permanently, but the vomiting crises continued. This persistence of the vomiting feature of the crises, while the pains were abolished, convinced Exner that the primary trouble in the crises was some affection of the vagus or its centers, the vomiting thus indicating the primary feature of the gastric crises. Assuming this to be the case, treatment should be directed against the primary affection of the vagus or its centers, correction of which would be followed by the spontaneous arrest of the pains. The aim thus would be to sever the vagus on both sides just below the diaphragm, close to the cardia. In order to prevent any eventual spasm of the pylorus he reasoned that the pylorus ought to be kept open by a drain tube. On the basis of these theoretical assumptions he has performed this operation on two patients. In both the vagus was found much degenerated, quite enough to explain the gastric crises, he thinks. The first patient was relieved completely of the gastric crises, but still suffers from preexisting lancinating pains in legs and bladder. The second patient was very restless and pulled out the drain tube and the stomach became dilated, the atony increasing and the patient soon dying from inanition. A subphrenic abscess was found under the left lobe of the liver. Exner concludes from these experiences that it would be preferable to resect the vagus just below the diaphragm, before it ramifies. To avoid complications, a perforated drain should be passed through an opening in the stomach wall into the duodenum. It is probably safe to remove the drain by the end of the third week. He advocates this method of treatment, instead of rhizotomy, as liable to prove equally effectual, while it is far simpler and less dangerous than the Förster technic.

Medizinische Klinik, Berlin

October 8, VII, No. 41, pp. 1565-1604

108 *Efficacy of Phosphorus in Senile and Tardy Osteomalacia. (Ueber Osteomalacia senilis und tarda.) H. Curschmann.
109 Prophylaxis of Puerperal Fever. (Verhütung des Kindbettfiebers.) C. J. Gauss. Commenced in No. 40.
110 Paroxysmal Tachycardia. (Analyse eines Falles von paroxysmaler Tachykardie.) R. Beck.
111 Radium Treatment of Cancer. (Behandlung des Krebses mit Radium als Ergänzung zu der chirurgischen Behandlung bei operablen und als selbständige Behandlungsmethode bei inoperablen Erkrankungen.) Nahmmacher.
112 *Salt-Poor Diet. (Zur Technik der kochsalzarmen Ernährung.) J. Leva.
113 Operative Treatment of Exophthalmic Goiter. (Umfrage über die chirurgische Behandlung der Basedowschen Krankheit.) Krecke, Enderlen, Schloffer and A. Cramer.
114 *Therapeutic Application of Negative Differential Pressure of the Lungs. (Anwendung der Luftdruckerniedrigung über den Lungen, eine wertvolle Heilmethode bei Herz-, Lungen- und Gefässerkrankungen.) Pick.
115 Dry Rot in Wood. (Ueber den Hausschwamm.) W. Wangerin.

108. Tardy and Senile Osteomalacia.—Curschmann asserts that non-puerperal osteomalacia is far more common than is generally assumed, and that frequently it is not recognized and the patients are treated on the wrong basis for assumed rheumatism, lumbago, sciatica, spondylitis or other spinal affection. The mistaken diagnosis is the more harmful, as treatment based on it is ineffectual, while phosphorus will cure the real trouble, the senile or tardy osteomalacia. During the last few years he has had twelve cases of pronounced osteomalacia in women approaching or just past the menopause. He advocates the term "tardy" osteomalacia for this form, as also for the tardy exacerbation of osteomalacia first developing during a pregnancy. One such case was in a woman of 43, whose osteomalacia developed during and subsided after her various pregnancies, and then recurred in a very severe form, seven years after the last pregnancy. He has encountered six cases of pronounced senile osteomalacia, and four of an abortive form, all but two of his osteomalacia patients being women. This rarity in men is one reason why it is so seldom recognized when it does occur in a man. In an instructive case of the kind a man of 65 had had severe osteomalacia for seven years, but no one had recognized it; the pains radiating to the sacrum and thigh had been diagnosed as sciatica. There were also pains in the chest in coughing, and the legs had grown stiffer and more painful until the man could only get around his room with support. Tentative antisyphilitic treatment gave no relief; neither did courses of treatment at Nauheim, Wiesbaden and elsewhere, to which he was sent by different

physicians in turn, with the diagnosis of gout, muscular rheumatism, chronic lumbago and finally sciatica, the history of treatments including a two-year course with a certain quack. But no measures gave permanent relief until Curschmann discovered the signs of severe osteomalacia, namely, extreme painfulness on pressure over the ribs, sternum or spine; moderate round dorsal kyphosis, the lower ribs resting on the bony framework of the pelvis; a transverse groove in the skin across the epigastrium and contracture of legs, especially of the adductors in standing and walking, the patient taking with great difficulty the shortest of steps, the thighs pressed close together, and stopping exhausted after a minute or two. On reclining the muscles relaxed. The tendon reflexes were normal. Under phosphorus, bed rest and baths the spontaneous pains disappeared entirely in four weeks, and in another month the patient was able to walk normally, without pain, and return to business. The lack of recognition of osteomalacia in this case had given the patient seven years of martyrdom. All these patients were well-to-do, and the osteomalacia developed very insidiously and slowly in all but one case in which it reached its acme in two months. The chest, spine and thighs are mainly affected in this senile and tardy form, the pelvis least or not at all. There was no tendency to paralysis in any of his cases, but in five of his six cases of senile osteomalacia, numbness and paresthesia in hands and feet suggested neuritis at first. The angiospastic symptoms subsided as the osteomalacia was cured. In two cases of the tardy form there were trophic disturbances in face, fingers or nails, but no trace of any complicating organic disease, mental disturbances or hysteria in any instance. The height was reduced a little, 5 cm. in one case. The efficacy of phosphorus in cod-liver oil in these cases confirms the diagnosis. He gives from five to three teaspoonfuls of a 0.01 per cent. solution at first, gradually dropping to one or two teaspoonfuls, but keeping this up for months; in two cases for nearly a year. The phosphorus has to be given continuously, like iodid in arteriosclerosis or thyroid in myxedema. The benefit from phosphorus-cod-liver oil confirms the assumption that rachitis and osteomalacia are essentially the same affection. Curschmann adds in conclusion that in the tardy and senile form of osteomalacia, castration without a preceding energetic and long-continued course of phosphorus treatment is actual malpractice.

112. **Salt-Poor Diet.**—Leva calls attention to a number of seasonings which can be used in place of salt in various dishes, such as mint thyme, capers, onions, laurel leaves, celery and cress, lemon, vinegar, mustard and sugar, disguising the lack of salt. Caper sauce, tomato sauce, madeira sauce, etc., mayonnaise and the copious use of cream, enable one to dispense with salt to an unanticipated extent. It is not a difficult matter to have the baker keep out enough unsalted dough to supply a loaf of unsalted bread. It can be made more palatable by having this loaf shortened with unsalted butter; in some countries, especially Italy, a large part of the population always use unsalted bread. Leva has been experimenting with sodium bromid as a substitute for salt, saying that the use of 1 or 2 gm. a day for a time would do no harm in the majority of cases, while it seasons bread, eggs, soups and vegetables in a fairly satisfactory manner. It does not taste like salt, but it enables the salt to be dispensed with better. His experiments have demonstrated that sodium bromid promotes the elimination of sodium chlorid, and thus indirectly of dropsical fluid, and it can usefully supplement the dietetic measures.

114. **Negative Differential Pressure in Treatment of Heart, Lung and Vascular Disease.**—Pick has used Bruns' apparatus for negative differential pressure in a number of cases, and has found that it arrests asthma, and aids in the cure of emphysema of the lungs and bronchial catarrh, while it regulates the circulation by promoting the reflux of blood from the periphery to the left heart by the aspirating action of the negative pressure. Not only the heart but the entire vascular system benefits by this. The method is thus peculiarly useful, he says, in arteriosclerosis, Respiration under the negative pressure is like that at high altitudes; the result is an expanding of the chest and strengthening of the breathing apparatus, stimulating the blood-producing organs to better functioning.

Monatsschrift für Kinderheilkunde, Leipsic

IX, No. 12, pp. 633-672

116 Chemical Composition of Human Milk. (Chemische Zusammensetzung der Frauenmilch auf Grund neuer Analysen.) E. Schloss.

117 Experimental Albuminuria and Nephritis Induced by Mechanical Factors. (Weitere Mitteilungen über mechanische Erzeugung von Albuminurie und Nephritis bei Tieren.) R. Fischl.

118 Clinical Importance of Albuminoids in Infants' Urine. (Zur klinischen Bedeutung des durch Essigsäure fällbaren Eiweisskörpers im Urin der Säuglinge.) Gläßborn.

119 Lipanin Not an Effectual Substitute for Cod Liver Oil in Rachitis. (Lipanin als Ersatzmittel des Lebertrans bei Rachitis. Sein Einfluss auf den Stoffwechsel.) J. A. Schabad and R. F. Sorochowitsch.

Münchener medizinische Wochenschrift

October 3, LVIII, No. 40, pp. 2097-2144

120 *Warming of Ether and Chloroform Vapor for General Anesthesia. (Vorwärmung von Aether- und Chloroformdämpfen für die Narkose.) A. Läwen.

121 *Early Stages of Deforming Spondylitis. (Ueber klinische Erscheinungen bei den Frühstadien der Spondylitis deformans.) E. Plate.

122 *Nail Extension for Fracture. (Ueber Erfahrungen mit der Nagelextension nach Steinmann.) E. Koerber.

123 Drug Eruption After Salvarsan. (Ueber medikamentöse Spätexantheme nach intravenösen Salvarsaninjektionen.) R. Frühwald.

124 Modification of Course of Syphilis Under Salvarsan. (Abweichungen im Verlaufe der Syphilis nach Anwendung von Arsenobenzol.) J. Desneux and B. Dujardin.

125 Severe Jaundice After Hectin Treatment of Syphilis. (Fall von schwerem syphilitischem Ikterus während der Behandlung mit Hektin. Heilung durch Salvarsan.) Dubot.

126 Gastro-Enteropexy for Volvulus of Posterior Retrocolic Gastro-Enterostomy. R. Werner.

127 *Operative Treatment of Tuberculous Cavity in the Lung by Total Mobilization of Chest Wall: Thoracoplastic Pleuropneumolysis. (Statistisches und Prinzipielles zur Frage der Rippenresektion ausgedehnten oder beschränkten Umfanges bei kavernöser Lungenphthise und bei Hämoptoe.) P. L. Friedrich. (Commenced in No. 39.

128 Treatment of Streptococcus Infection in General, Especially in Abortion. (Streptokokken-Aborte und ihre Behandlung.) H. Schottmüller. Commenced in No. 39.

120. **Warming the Anesthetic Fumes for Major Operations.**—Läwen states that complications on the part of the lungs follow in about 5 per cent. of all the laparotomies at the Leipsic clinic, even those done under local anesthesia. He is convinced that the essential factor is the impossibility of adequate expectoration after the operation; at the same time chilling probably contributes, and he has devised a contrivance to add to the apparatus for mixed oxygen and ether or chloroform inhalation anesthesia, which warms the fumes. In twenty-seven operations performed with this technic the results seemed to be excellent, and he thinks that possibly this method may prove useful in protracted laparotomies or operations leaving extensive raw surfaces, such as amputation of the breast, or when the patients are in shock or have lost an excessive amount of blood.

121. **The Early Stages of Deforming Spondylitis.**—Plate calls attention to the necessity for early diagnosis of this affection in order to prevent aggravation later. By treatment as for inflamed flat-foot, radiotherapy with arc-light baths, supplemented by strong irritation to the skin (by grandination), and with a supporting corset in the chronic forms, it is possible to cure or relieve to a great extent. The benefit derived confirms his assumption of the trouble as loss of the elasticity of the intervertebral disks; they are crushed down and the upper edges of the bodies of the vertebræ become jagged. These changes are readily seen with the Roentgen rays and it is thus possible to differentiate the condition when the patients complain of pains in the back when they walk, stand or sit, which vanish at once when they recline. No other spinal affection has this characteristic of the disappearance of the pain on lying down. In walking the patients try to avoid shaking the spine; they take short cautious steps, not stretching the knee, and striving to spare the spine by grasping the thigh with the hand. No tendency to curvature was noticed in any case, and although pressure and tapping the spine cause pain or aggravate existing pain, yet it is never so intense as with tuberculous or other severe spinal lesions. His patients were all men forced to bear heavy loads or push heavily laden small carts, and a number were under 50 years old. Roentoscopy is especially instructive when the spine is examined sagittally.

122. **Nail Extension for Fractures.**—Koerber has applied Steinmann's nail extension in seventy cases of fracture, and considers the method useful in cases in which there are obstacles to the Bardenheuer adhesive-plaster extension technic, or the ordinary methods of treatment prove inadequate, but says that it is not a standard method for the ordinary run of cases, and it is not ripe for introducetion into general practice.

127. **Operative Treatment of Tuberculous Lungs by Total Mobilization of Chest Wall: Thoracoplastic Pleuro-Pneumolysis.**—Friedrich's work in this line is familiar to American readers (THE JOURNAL, 1909, LIII, 1970). He here reviews his experiences to date and emphasizes the fact that fourteen of his patients are in fairly good health to date who were saved by his operation during the last four years when the severe general symptoms accompanying the progressing tuberculous cavity in the lung foretold a speedy demise. The fine results obtained from immobilizing the lung by induced pneumothorax encouraged him to operate in this way in cases in which there were obstacles to the therapeutic pneumothorax. Quincke was the pioneer in this line in 1888, and the Marburg clinic has pressed forward in this path, having now a record of twenty-eight operations, resecting more or less of the ribs over the cavity. Experience has shown that recent metastasis in other organs, larynx, intestines or bones, contra-indicates the operation. Six of the total eight cases with a fatal outcome were of this class, which is now excluded from this method of treatment. Patients under 15 and older than 40 are likewise excluded, but persistent fever and swarms of bacilli do not necessarily contra-indicate the operation. Some of the most successful cases were of this class. The total mortality of twenty-six per cent. in these twenty-six cases of progressing tuberculous cavity-production certainly is far from disheartening. The main point is to be certain that the chest wall and the pleura have become hard and stiff under the influence of the irritation. If they give way under the pressure after the ribs are resected, and sink down on the sound lung, its functioning is impaired and the operations fail to benefit. Normal functioning of the other lung is indispensable to success, but it is not necessary always for it to be entirely sound. The operation is less serious, while the outcome seems equally good, when the ribs are resected through an incision in the axilla, a longitudinal incision through the serratus, folding in the lips of the soft parts like a cushion over the stumps of the ribs, pushing back the pleura and lung and suturing the skin to reduce the girth. He shows in some diagrams how this technic compresses the lung between the spine and the sternum. This technic has several advantages but it is harder to detach the first rib, and the brachial plexus may be injured while functioning of the serratus may be impaired more than with other technics. A number of typical cases are described in detail, with diagrams to illustrate the special conditions. In one case all three right lobes were infiltrated, with multiple cavities; the operation was aimed only at the two upper lobes, the third lobe being left until one year later when the patient, a physician of 25, had recuperated wonderfully. In a number of cases, recurring severe hemoptysis was the stimulus to operation, which proved thus a direct life-saving measure in some instances. The cavities shriveled up so quickly that no need was felt for direct local cauterization, but the possibility of this should not be forgotten with this thoracoplastic pleuropneumolysis.

Virchows Archiv, Berlin

September, CCV, No. 3, pp. 321-480

129 Kidney Stones in Infants. (Nephrolithiasis im Säuglingsalter.) H. Joseph.
130 Regeneration of Blood in the Liver. (Physiologische und pathologische Blutregeneration in der Leber.) M. Askanazy.
131 Fragmentation of the Heart. (Anatomische und experimentelle Untersuchungen über die Fragmentation des Herzens.) M. Lisauer.
132 Anatomic Changes in Heart Under Influence of Nicotin. (Anatomische Veränderungen des Herzens Infolge von Nikotin—Experimentalstudie.) C. v. Otto.
133 Chronic Alcoholism. (Zur Frage des chronischen Alkoholismus.) Fahr.
134 Plasma Cells in Human Lacrimal Glands. (Vorkommen und Herkunft von Plasmazellen in der menschlichen Tränendrüse.) B. Hannes.
135 Metastasis of Cancer in Central Nervous System. (Metastasierung maligner Tumoren ins Zentralnervensystem.) J. Heinemann.
136 Fibromyomas of the Gastro-Intestinal Tract. (Zur Lehre der Fibromyome des Verdauungskanals. Myome des Oesophagus und der Kardia.) N. N. Anitschkow.
137 True Secondary Diphtheria of the Skin. (Zur Kenntnis der Hautdiphtherie.) A. Reinhardt.
138 Participation of Glomerull in the Varying Thickness of Kidney Cortex. (Beteiligung der Glomeruli an der wechselnden Breite der Nierenrinde.) R. Steinebach.
139 Calcification of the Dura. (Weiterer Beitrag zur Pachymeninxverkalkung bei Usura cranii.) E. Allenbach.
140 Gouty Tophi in Nubian Mummy. (Harnsäurenachweis in gichtischen, der altchristlichen Zeit entstammenden Tophis.) W. Ebstein.

Wiener klinische Wochenschrift, Vienna

October 5, XXIV, No. 40, pp. 1383-1418

141 Importance of Anaphylatoxin for Infectious Disease. (Bedeutung des Anaphylatoxins für die Infektionskrankheit.) E. Weil.
142 Roentgodiagnosis of Deep Stenosis in the Small Intestine. (Erkennung der tieferen Dünndarmstenose mittels des Röntgenverfahrens.) G. Schwarz.
143 Syphilids Under Influence of Salvarsan. (Ueber einige durch Salvarsanbehandlung bedingte Eigentümlichkeiten kutaner Syphilis.) M. Oppenheim.
144 Alimentary Galactosuria of Nervous Origin. (Ueber alimentäre Galaktosurie nervösen Ursprungs.) H. Pollitzer.
145 The Health in Youth of the Blind. (Gesundheitsverhältnisse der Jugendblinden.) P. Silberstern.
146 The Kidney Disease in Familial Amaurosis. (Nierenaffektion familiär Amaurotischer.) P. Silberstern.

Zentralblatt für Chirurgie, Leipsic

October 7, XXXVIII, No. 40, pp. 1337-1368

147 *Blocking of the Brachial Plexus. (Die Anästhesierung des Plexus brachialis.) D. Kulenkampff.

147. **Regional Anesthesia by Blocking the Brachial Plexus.**—Kulenkampff has applied the technic of which he gives an illustrated description in twenty-five cases. The result was complete anesthesia of the entire arm in fifteen and anesthesia of enough of the arm for the desired operation in five others, while the other five cases were operated on during the tentative experiments with the technic. The best point of access to the plexus is just above where it is crossed by the omohyoid muscle and the transversalis colli artery. The patient seated, the subclavian artery is located by palpation or even by the eye, the head held in the proper position. The subclavian can generally be located at the point where if the external jugular vein were extended it would cut across the clavicle. The needle is inserted at this point, close to the upper margin of the clavicle, seeking to touch with the needle one of the arm nerves. On contact with the nerve there is tingling in the arm and motor phenomena but no pain. If the needle has been pointed correctly these paresthesias develop as soon as the skin and deep fascia have been pierced. The point of the needle must be directed toward the tip of the second or third thoracic spinous process. If the needle butts against the first rib without reaching the plexus, it has been introduced too far toward the side; the sign that the nerve has been reached is the appearance of the paresthesias. The anesthesia induced by the nerve-blocking injections lasts from ninety minutes to two or three hours. The only pain during the entire procedure and operation is from the prick to make the little infiltration blister through which the needle is introduced into the depths.

Zentralblatt für Gynäkologie, Leipsic

October 7, XXXV, No. 40, pp. 1393-1424

148 Posterior Cervical Cesarean Section. (Ueber Sectio caesarea cervicalis posterior.) O. Polano.
149 Treatment of Genital Prolapse. (Zur Prolapsbehandlung.) T. R. Jaschke.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 28, XXXII, No. 117, pp. 1235-1242

150 *Galvanic Electrotherapy in Amenorrhea. O. Rigamonti.

October 1, No. 118, pp. 1243-1258

151 Physiology of Secretion of Urine. I. (La secrezione dell'urina.) F. Bottazzi.
152 Diagnostic Importance of Variation in Temperature in the Axillæ. (Sul valore diagnostico delle differenze termometriche tra le due ascelle.) D. Miotto.

150. **Electrotherapy in Amenorrhea.**—Rigamonti applies one pole with the galvanic current to the sacrum and the other to the hypogastrium, and reports three cases of amenorrhea in which this treatment proved effectual although the trouble was of a different origin in each. In one, menstruation had been arrested by a fright, in another the condition suggested

possibly incipient tuberculosis, and in the third case there was chlorosis. The patients were from 19 to 28 years old, and the symptoms from the suspended menstruation were about the same in all. From thirty to forty sittings were given, daily at first and then at longer intervals.

Policlinico, Rome

October 1, XVIII, No. 40, pp. 1257-1288

153 Functional Importance of the Interstitial Cells in the Testicle. (Ulteriori ricerche sperimentali sul valore funzionale delle cellule interstiziali del testicolo.) V. Barnabo.
154 Intravenous Injections of Mercuric Chlorid in Treatment of Puerperal Fever and Tetanus. (Due casi di setticoemia puerperale guariti con le iniezioni endovenose di sublimato corrosivo.) O. Rigamonti.
155 Epidemic of Laryngitis Stridulus of Influenzal Origin. V. Praschetti.

Riforma Medica, Naples

October 2, XXVII, No. 2, pp. 1093-1120

156 *Successful Resection of Scapula for Enchondroma. (Resezione subtotale della scapola per voluminoso encondroma. Guarigione.) L. De Gaetano.

156. **Resection of the Scapula.**—Gaetano reports excellent functional outcome in a young man whose scapula was resected on account of a large enchondroma two years ago. The functioning of the arm is scarcely interfered with, the patient being able to lift a 200-pound weight. He knows of twenty-seven operations of the kind on record, which he tabulates, the outcome being constantly favorable since 1870, with exception of one case in which the patient succumbed to metastasis of the sarcoma.

Hygiea, Stockholm

September, LXXIII, No. 9, pp. 1025-1104

157 *Gunshot Wounds of the Heart. (Om skottskador på hjärtat.) S. Sjövall.
158 *Coincident Similar Mental Disease in Twins. (Fall af psykos hos tvillingar.) E. Göransson.
159 *Whooping-Cough in Connection with Spasmophilia. (Om pertussis och pertussaliknande katarrer samt deras förhållande till den spasmofila diatesen.) W. Wernstedt.
160 *Torsion of the Spermatic Cord. (Om torsion af sädesstränger.) O. Löfberg.

157. **Gunshot Wounds of the Heart.**—Sjövall devotes nearly ten pages to tabulation of the details in thirty-one operative cases of this kind, including one from his own experience. These data show that the patient stands a much better chance when a proper operation is done than under expectant treatment. In sixteen cases apparently complete restitution followed suture of the wound.

158. **Psychosis in Twins.**—Göransson reviews the fifty cases on record of a similar form of mental impairment in twins, and reports a case of the kind from his own experience. His patients were women 23 years old, and the psychosis came on suddenly in both with less than two months' interval. It was of the confusional type with agitation in one and stupor in the other, and with complete recovery in two or three months.

159. **Whooping-Cough and Spasmophilia.**—Wernstedt has been examining children with pertussis during a recent epidemic to determine the electric excitability. He found a constant connection between the severity of the spasmodic coughing and the reaction to the electric tests. His findings suggest a close connection between the spasmophilic diathesis and the pertussis, and he thinks that both the former and severe forms of the latter are an indication of a neuropathic constitution.

160. **Torsion of the Testicle.**—Löfberg reports three cases and refers to seventy-six on record. Two of his patients were infants less than a year old, the third a man of 28; the torsion was the result of trauma in this case. Castration had to be done in 76 per cent. of the cases on record.

Ugeskrift for Læger, Copenhagen

October 5, LXXIII, No. 40, pp. 1451-1484

161 *Chronic Appendicitis. (Undersøgelser over kronisk Appendicitis.) V. Scheel.
162 Vaccine Therapy of Alveolar Pyorrhea. (Pyorrhoea alveolaris og dens Behandlung med Injektioner af autogen Vaccine.) O. Drescher.

161. **Chronic Appendicitis.**—Scheel has examined the appendix after extirpation in 164 cases. He found signs of chronic inflammation in fifty-eight of the eighty-five cases in which the appendicitis was supposed to be merely an acute lesion, and he is inclined to think that in most of the so-called chronic appendicitis cases, the trouble was inflammation of the cecum as well. Inflammation of the cecum has many ups and downs, and there may be long intervals of latency. It is possible that the cure ascribed to the appendectomy in many instances may have been merely the effect of the rest in bed and dieting, or it may have been coincident with a spontaneous remission.

Books Received

Books received are acknowledged in this column and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

Lehrbuch der Hyperämiebehandlung akuter chirurgischer Infektionen. Theorie und Praxis für Aerzte und Chirurgen. Von Dr. med. Eugen Joseph, Privatdozent der Chirurgie an der Friedrich-Wilhelms-Universität Berlin. Mit einem Vorwort von Prof. August Bier. Paper. Price, 7 marks. Pp. 283, with illustrations. Leipzig: Dr. Werner Klinkhardt, 1911.

Dental Disease in Its Relation to General Medicine. By J. F. Colyer, L.R.C.P., M.R.C.S., L.D.S., Dental Surgeon to Charing Cross Hospital and the Royal Dental Hospital, England. With the Asistance of Stanley Colyer, M.D. (Lond.), M.R.C.P., D.P.H. Cloth. Price, $1.60 net. Pp. 180, with 62 illustrations. New York: Longmans, Green & Co., 1911.

The Report of the Philadelphia Milk Show. Its Organization and Management and a Description of the Exhibits. Edited by Arthur Edwin Post, Executive Secretary. Paper. Dr. Joseph S. Neff, Chairman of the Executive Committee, 1912 Chestnut Street, Philadelphia. Pp. 123, with illustrations. Published by the Executive Committee, 1911.

Die Lungensaugmaske in Theorie und Praxis. Physikalische Behandlung von Lungenkrankheiten, Blutarmut, Keuchhusten, Asthma, Kreislaufstörungen und Schlaflosigkeit. Zusammenfassende Ergebnisse aus Literatur und Praxis. Von Dr. E. Kuhn. Paper. Price, 1 mark. Pp. 25, with 24 illustrations. Berlin: Julius Springer, 1911.

The Origin of Life. Being an Account of Experiments with Certain Superheated Saline Solutions in Hermetically Sealed Vessels. By H. Charlton Bastian, M.D., F.R.S., Emeritus Professor of the Principles and Practice of Medicine, University College, London. Cloth. Price, $1.50. Pp. 119. New York: G. P. Putnam's Sons, 1911.

Transactions of the American Association of Genito-Urinary Surgeons. Twenty-Fifth Annual Meeting Held at the Hotel Astor, New York City, May 31-June 1, 2 and 3, 1911. Vol. VI. Paper. Pp. 198, with illustrations. Published for the Association by Frederick H. Hitchcock, 105 W. 40th Street, New York.

The Way with the Nerves. Letters to a Neurologist on Various Modern Nervous Ailments, Real and Fancied, with Replies Thereto Telling of Their Nature and Treatment. By Joseph Collins, Physician to the Neurological Institute of New York. Cloth. Price, $1.50. Pp. 313. New York: G. P. Putnam's Sons, 1911.

Movable Kidney, Its Etiology, Pathology, Diagnosis, Symptoms and Treatment. By William Billington, M.S. (Lond.), F.R.C.S., Senior Surgeon to Out-Patients, Queen's Hospital, Birmingham. Cloth. Price, 7 shillings 6 pence net. Pp. 167, with illustrations. New York: Cassel & Co., 1910.

The Fight Against Tuberculosis and the Death-Rate from Phthisis. By Karl Pearson, F.R.S., Galton Professor of Eugenics in the University of London. Questions of the Day and of the Fray. No. IV. Paper. Price, 1 Shilling. Pp. 35. London: Dulau & Co., 37 Soho Square, W., 1911.

Microbiology. For Agricultural and Domestic Science Students. Edited by Charles E. Marshall, East Lansing, Mich., Professor of Bacteriology and Hygiene, Michigan Agricultural College. Cloth. Price, $2.50 net. Pp. 724, with 128 illustrations. Philadelphia: P. Blakiston's Son & Co., 1911.

Eleventh Annual Meeting of the National Civic Federation, New York, Jan. 12, 13 and 14, 1911. Welfare Workers' Conference. Paper. Pp. 385, with illustrations. New York: The National Civic Federation, Metropolitan Bldg.

The House-Surgeon's Vade-Mecum. By Russell Howard, M.B., M.S., F.R.C.S., Surgeon to Poplar Hospital, London. Cloth. Price, $2.10 net. Pp. 511, with 142 illustrations. New York: Longmans, Green & Co., 1911.

A Mother's Guide. A Manual for the Guidance of Mothers and Nurses. By Francis Tweddell, M.D., Alumnus, Bellevue Hospital, New York. Cloth. Price, $1. Pp. 182. New York: James T. Dougherty, 1911.

Transactions of the New Hampshire Medical Society. At the One Hundred and Twentieth Anniversary, held at Concord, May 11 and 12, 1911. Cloth. Pp. 241. D. E. Sullivan, Secretary, Concord.

Fortieth and Forty-First Reports of the Board of Directors of the Connecticut Industrial School for Girls. Presented to the General Assembly at its Session in January, 1911. Paper. Pp. 63.

Technik der klinischen Blutuntersuchung. Für Studierende und Aerzte. Von Dr. A. Pappenheim, Berlin. Paper. Price, 2 marks. Pp. 55. Berlin: Julius Springer, 1911.

Forty-Sixth Report of the Providence Hospital, Washington, D. C. For the Fiscal Year Ending June 30, 1911. Paper. Pp. 74, with illustrations.

Annual Report of Saginaw General Hospital, Saginaw, Mich. Paper. Pp. 56, with illustrations.